VOLUME V

TECHNICAL APPENDICES

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September 1992
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TECHNICAL APPENDICES

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STATE OF THE ECONOMY

FOUNTAIN VALLEY, CALIFORNIA

Prepared for:

City of Fountain Valley
General Plan Revision Program

Revised
February 1991

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I. INTRODUCTION

Beginning about the mid-1970s the suburbs of northern and central Orange County passed from a dynamic adolescence into maturity. Their population growth curves tapered off as the last large-scale residential tracts were completed. Remaining vacant sites became transformed into retail centers, horizontal industrial and office parks, or such specialized land uses as senior citizen housing complexes, restaurant/lodging clusters or other specialty use districts. The school-age population contracted as neighborhoods reached a period of stability and limited turnover. Those communities which possessed historic downtowns launched major renovation or recycling programs; those lacking commercial cores pursued other devices to create a sense of identity and economic foundations. The attraction and expansion of regional malls, creation of auto dealer centers and construction of high volume discount retail clusters gained in favor to meet revenue needs.

Suburbs two decades ago may have been defined by their neighborhoods but by the late 1980s it was evident that they were sustained by their economies. The limitations on property tax revenue as a result of Proposition 13, state spending restrictions on localities, and reduced federal aid forced communities to become more economically self-reliant. This rise of the "Entrepreneurial City" has taken on many forms, with important implications for municipal planning activities. Witness the widespread adoption of specific plans and special assessment districts to guide local development and adjustments to change. Accompanying those tools, numerous redevelopment project areas were designated to promote economic and planning objectives. In terms of redevelopment's diffusion, four out of five Orange County cities activated redevelopment programs after 1970, extending over more than 26,000 acres.

As a result of these structural changes in the region's growth dynamics and new institutional approaches to local policy, economic development concerns now dominate the planning agendas of many cities. Existing land use patterns and proposals for new development come under closer scrutiny for their service

costs and revenue-generating qualities. Thus, within the General Plan process, land use must be treated as more than an inventory of acreages and map of vacant sites remaining for particular types of urban activities. Functional sectors and geographic areas of economic strength or weakness should be identified and analyzed as part of the comprehensive planning endeavor. From an economic development perspective, it is the fiscal contribution of land uses that determines how readily local policies may be implemented and goals attained. Without strong revenue streams, a community's ability to provide basic services is strained and its quality of life becomes threatened.

Maturing suburbs similar to Fountain Valley face at least three economic development challenges which can be examined in a planning context:

* To maintain a revenue base from economic activities and to reduce any erosion of that base due to competition from nearby jurisdictions;

* To fully utilize the array of fiscal and planning tools available, such as redevelopment, benefit assessment areas and specific plans, to address the concerns of internal economic structure and its performance;

* To create and maintain a strong community image, attractive to both business and residents.

This research report, therefore, analyzes the status of economic conditions in the City of Fountain Valley. Understanding the strengths and weaknesses within the city's economy and their implications for policies requires some knowledge of regional conditions and external constraints along with a review of the local consumer base which supports business and service functions.

The document is organized into four subsequent chapters. The first reviews the stabilization of growth in the south central subregion of Orange County, placing Fountain Valley's demographic and housing character within the context of that of adjacent cities. It also presents evidence of local household and income pro-

files, which largely define the support for the local economy. The chapter ends with commentary on the jobs/housing balance in the community, subregion, and the county. The discussion in Chapter III analyzes the performance of the city's retail sectors in considerable detail. Hence it updates similar research conducted by Alfred Gobar Associates in 1985 and early 1989. Chapter IV examines what may be termed the "disposition of outputs" from the private economy, that is, the revenue and expenditure patterns of local government. In addition, the chapter depicts Fountain Valley's increasing use of redevelopment as a fiscal and planning tool, particularly since the mid-1980s.

II. FOUNTAIN VALLEY IN REGIONAL CONTEXT

For most of south central Orange County the era of massive construction and explosive population growth had played out by 1980. City agendas shifted from questions of housing development to economic matters which could sustain local service demands and enhance each community's quality of life. Local job provision via enlarged industrial, office, and service land uses and revenue enhancement via retail sector expansion programs reflected the new suburban entrepreneurialism. Questions of population size were seldom raised as issues. Instead population composition and its translation into demands for particular services or its ability to support a healthy economy took on a greater importance. Suburban maturation did not spare Fountain Valley during the past decade; in fact, it heightened an appreciation of local strengths as well as a recognition of the challenges posed by neighboring jurisdictions.

Housing and Population Dynamics

The data in Tables 1 and 2 underscore the slow growth conditions in Fountain Valley and nearby cities. Relative to Orange County as a whole, all area cities recorded growth rates below the countywide average in the decade of the 1980s. Only in Costa Mesa and Santa Ana, where strong immigration and neighborhood recycling to higher densities occurred, have population and housing increases even come close to matching county rates of change. Detailed estimates from the state's Department of Finance and historic census figures reveal that:

- Approximately 130 new housing units were completed annually in Fountain Valley during the past decade, in contrast to 760 per year in the 1970s.
- Population growth has moderated to a similarly low levels in Garden Grove and virtually ceased in Westminster.

TABLE 1.
HOUSING TRENDS IN FOUNTAIN VALLEY AND NEIGHBORING CITIES

City	Total Housing Units			Average Annual Change 1980-1990	
	April 1980	Jan 1985	Jan 1990	Number	Cmpd. Growth Rate(%)
Fountain Valley	16,758	17,106	18,012	129	0.74
Costa Mesa	33,866	35,326	39,293	557	1.53
Garden Grove	42,872	44,716	46,307	352	0.79
Huntington Beach	63,686	67,308	71,966	849	1.26
Santa Ana	67,180	69,925	75,463	850	1.20
Westminster	24,563	25,237	25,920	139	0.28
Orange County Total	720,984	773,417	870,321	15,317	1.95

Source: Calculations by Urban Research Associates from data in U.S. Bureau of the Census. Summary Characteristics for Governmental Units and Standard Metropolitan Statistical Areas, 1980 Census of Population and Housing; and California Department of Finance, Population Research Unit series E-5 reports.

TABLE 2.
POPULATION TRENDS IN FOUNTAIN VALLEY AND NEIGHBORING CITIES

City	Total Population April 1980	Total Population Jan 1985	Total Population Jan 1990	Average Annual Change 1980-1990 Number	Average Annual Change 1980-1990 Cmpd. Growth Rate(%)
Fountain Valley	55,080	55,580	56,382	134	0.23
Costa Mesa	82,291	87,095	94,706	1,273	1.45
Garden Grove	123,351	131,783	135,286	1,224	0.95
Huntington Beach	170,505	181,946	191,630	2,167	1.21
Santa Ana	203,713	224,127	235,961	3,307	1.52
Westminster	71,133	72,970	73,403	233	0.32
Orange County Total	1,931,570	2,110,610	2,326,211	40,476	1.92

Source: Calculations by Urban Research Associates from data in U.S. Bureau of the Census. Summary Characteristics for Governmental Units and Standard Metropolitan Statistical Areas, 1980 Census of Population and Housing; and California Department of Finance, Population Research Unit series E-5 reports.

* At the beginning of 1990, Fountain Valley's population stood at approximately 56,400 persons. As data from the 1990 census are released we will learn more about the characteristics of those residents but it its clear that their total number is not likely to change significantly before the turn of the century.

Demographic and Income Profiles

The detailed population and housing information collected in the 1990 federal census will not be tabulated and reported until mid-1992. However, some general outlines of Fountain Valley's socio-economic conditions may be obtained from data supplied by the city to the state annually and from estimates prepared by Urban Decision Systems, a respected private purveyor of demographic evidence. The most recent estimates for Fountain Valley, its surrounding communities, and Orange County indicate

* Just over 18,000 households, the fundamental suburban consumption unit, exist in the City of Fountain Valley.

* One out of six Fountain Valley households is occupied by just one individual, versus a one-in-four single person proportion for Orange County.

* A larger average household size in Fountain Valley (3.15) than countywide (2.72) as shown in Table 3.

* A far stronger single-family housing orientation in the community than in any other area city or in Orange County as a whole. Today, nearly four-fifths of all housing within Fountain Valley consists of single family homes, a level unequalled in the county's south central section.

This housing mix and family emphasis in Fountain Valley has an important bearing on area retail market potentials. Couples with growing children tend to allocate large shares of their income on such basic necessities as food,

TABLE 3.
COMPARATIVE HOUSING AND HOUSEHOLD CHARACTERISTICS
1990

City or Area	Total Households	Persons Per Hhld.	Mix of Housing Units: Single Family	Multi-Family	Mobile Homes
Fountain Valley	18,012	3.15	79.3 %	18.8 %	1.9 %
Costa Mesa	39,293	2.40	44.8	52.9	2.3
Garden Grove	46,307	2.93	61.6	34.9	3.5
Huntington Beach	71,966	2.72	60.3	35.9	3.7
Santa Ana	75,463	3.20	50.2	45.9	3.9
Westminster	25,920	2.90	63.3	27.3	9.5
County Total	870,321	2.72	59.5	37.4	3.1

Source: Calculations by Urban Research Associates from California Department of Finance, Population Research Unit series E-5 reports.

clothing, and transportation. However, since most local neighborhoods are well established, they spend less on home improvements but regularly purchase capital goods associated with the dwelling unit, including furnishings and replacement appliances. The imprint of Fountain Valley's demographic profile on local retail performance is examined in a subsequent section of this report.

High housing values and the dominance of dual wage-earner households produces a stronger local income pattern than the county averages. Urban Research Associates estimates the following 1990 comparative incomes:

* Household Median
(Half above and half below this figure)

Fountain Valley	$ 52,925.
Orange County	$ 40,588.

* Percent of Households with Incomes Over $ 60,000:

Fountain Valley	40.6 %
Orange County	17.8 %

These income contrasts, displayed in greater detail within Table 4, point to the upper-middle income character of Fountain Valley. Yet some socio-economic diversity is evident as nearly one-fourth of the city's households have earnings below $ 30,000 per year. A majority of that group consists of retirees with limited pensions, persons living alone, and young, single-parent families.

Commercial/Industrial Growth
and the Jobs/Housing Balance

The past two years brought a rising concern with one particular aspect of Orange County's quality of life --- traffic congestion. Much of the cause of our regional traffic problems supposedly can be traced to those cities which have encouraged massive commercial and industrial development while neglecting

TABLE 4.
FOUNTAIN VALLEY AND ORANGE COUNTY INCOME PROFILES

	Percent of Households	
	City of Fountain Valley	Orange County
Less Than $ 20,000	13.9 %	23.3 %
$ 20,000 - $ 29,999	9.9	13.6
$ 30,000 - $ 39,999	10.7	12.4
$ 40,000 - $ 49,999	11.7	11.6
$ 50,000 - $ 59,999	13.2	21.3
$ 60,000 - $ 74,999	16.5	9.5
$ 75,000 and Above	24.1	8.3
Median Income:		
Households	$ 52,925.	$ 40,588.
Families	$ 58,165.	$ 49,519.

Source: Calculations by Urban Research Associates based on data supplied by Urban Decision Systems, Inc.

the provision of housing for their workers. Traffic questions, thus, rest on local land use policies, including city economic development orientations. In addition, the highly fragmented character of local political jurisdictions, requires that the jobs/housing balance priorities be examined at a regional or subregional level as well as within a single locality.

Evidence on the geographic concentration of new construction in south central Orange County and the ratios of jobs-to-housing units bodes well for Fountain Valley:

* Fountain Valley continues to add new housing to its local supply, averaging 120 units per year since the mid-1980s (Table 5). That level is comparable to housing gains in Westminster (137 per year) but well below those in Costa Mesa (793 per year), where in-fill development and neighborhood recycling to higher densities have dominated.

* In the last five years of the 1980s Fountain Valley added nearly $ 150 million in new commercial and industrial development to its property tax base.

* As important as that has been to the city, it pales beside the $ 560 million and $ 895 million in non-residential construction which took place in Huntington Beach and Santa Ana respectively, two cases where sizeable vacant tracts have been converted to commercial, office, and industrial uses. (Figure 1).

* Orange County is well-known for its strong regional employment base, with 147 jobs per 100 housing units.

* Fountain Valley likewise should be credited for its strong jobs-to-housing balance --- 146 jobs for every 100 housing units. There is a widely held "bedroom suburbia" image of south and west central Orange County, but that label is not applicable to Fountain Valley. As of 1987, about 25,400 jobs were located within the city. In order, the major employment categories are retail trade, medical services, manufacturing, insurance services, and local government.

TABLE 5.
BUILDING INVESTMENT IN FOUNTAIN VALLEY

New Housing Construction

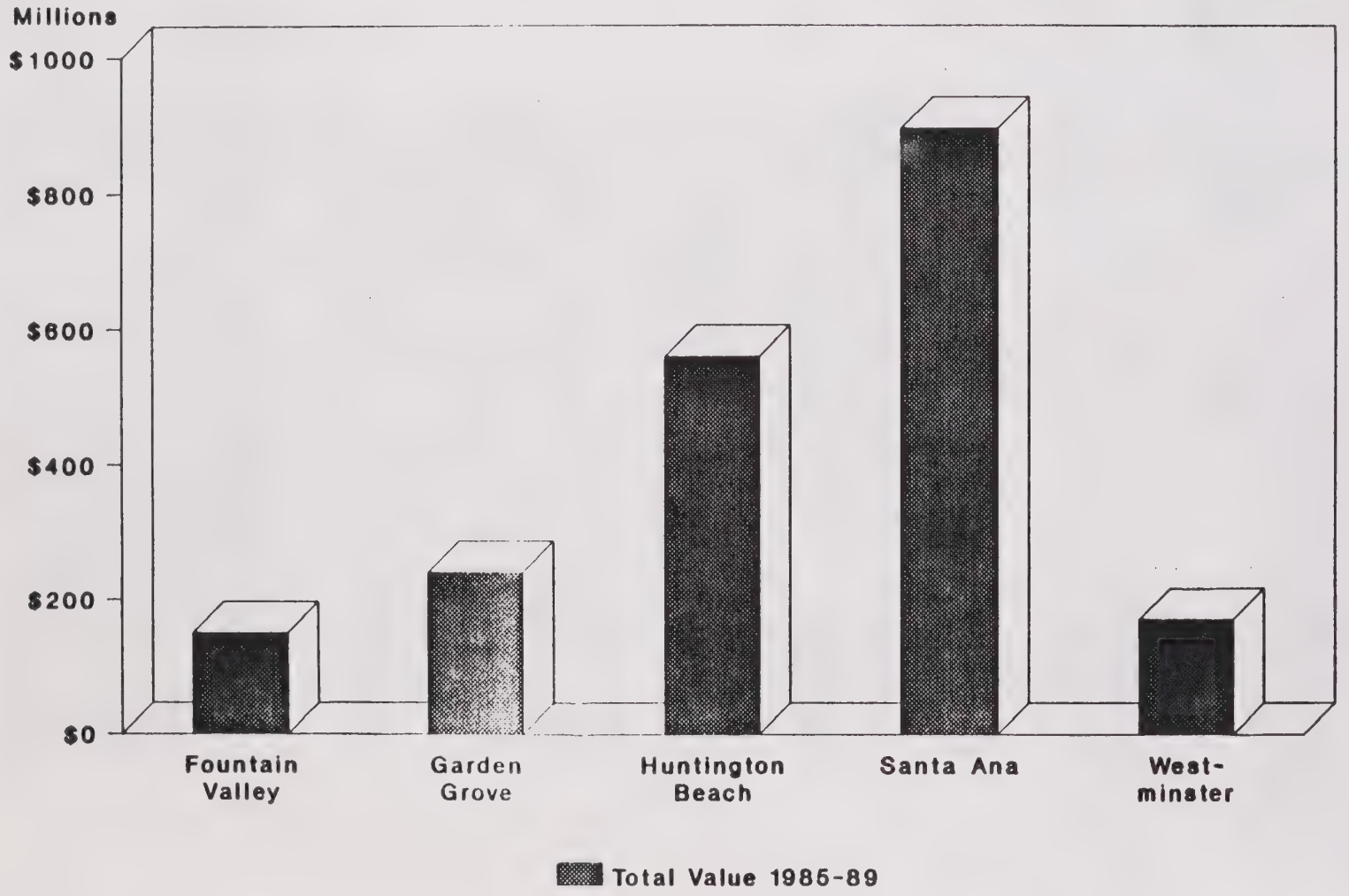
	Single Family Units	Multiple Family Units	Total Permit Value (thousands)
1985	144	57	14,679.
1986	104	21	12,866.
1987	44	0	7,723.
1988	100	71	15,931.
1989	54	5	12,946.
Annual Average:	89	31	

Non-Residential Construction Value

1985	26,262,000.
1986	21,393,000.
1987	17,912,000.
1988	39,662,000.
1989	44,437,000.

Source: Compiled by Urban Research Associates from Orange County Progress Report and Economic Sciences Corporation, California Building Permit Activity.

NON-RESIDENTIAL CONSTRUCTION INVESTMENT
FOUNTAIN VALLEY & NEIGHBORING CITIES



URA: FIGURE 1.

The amount and composition of future job growth in Fountain Valley will be driven by the pace of development in Southpark, any land use intensification in the industrial area south of Talbert and in office/health service job expansion. Regional forecasters have envisioned a job total of 31,900 for the city in the year 2010, a one-quarter increase above the present level (Table 6). Regardless of the specific numbers in that employment expansion, Fountain Valley will maintain its role as a balanced community over the next two decades.

TABLE 6.
JOBS/HOUSING BALANCE
SOUTH CENTRAL ORANGE COUNTY

City or Region	Jobs-to-Housing Ratios 1987 Estimate	2010 Forecast
Fountain Valley	1.46	1.65
Costa Mesa	2.08	2.26
Garden Grove	0.98	1.13
Huntington Beach	0.97	0.94
Santa Ana	1.93	2.12
Westminster	0.87	0.76
Orange County	1.47	1.44
Southern California Region	1.31	1.22

Fountain Valley
Forecast Increases 1987-2010

Employment Change	
Total	6,530
Annual Average	284
Housing Change	
Total	1,941
Annual Average	84

Source: Calculations based on Southern California Association of Governments, Growth Management Plan, unpublished data files, November 1989.

III. COMMERCIAL SECTOR PERFORMANCE

In fiscal terms, the Fountain Valley economy rests on a foundation of retail and service purchases by local residents and non-resident workers in the city. Historically, that translated into a strength for convenience goods businesses such as grocers, drug stores, restaurants and service stations. Yet, the community's location within the long shadows of major shopping malls and auto dealer clusters has led to leakages of sales potential and posed constraints on commercial opportunities. This chapter examines the status of the city's retail and service sector through a review of taxable sales trends since the mid-1980s, a period in which prominent free-standing retailers, along with major new shopping centers, opened in Fountain Valley. The review, thus provides currency to earlier analyses conducted by Alfred Gobar Associates.

Retail Sales Trends and Mix

A recent surge in local business performance in Fountain Valley is evident from the taxable sales records for the second half of the 1980s. Tables 7 through 11 contrast the retailing and service sectors of Fountain Valley with those of other area cities.

- Total taxable sales in retail stores in 1989 (the latest full year for which data are available) surpassed the $ 330 million mark, a figure up almost 21 percent from the previous year.

- Receipts at service firms and manufacturers who sell directly to end-users contribute another $ 112 million to the local taxable economy.

- In combination, those commercial/industrial sectors were responsible for $ 4.5 million in sales tax revenues to Fountain Valley's city government, an amount well above that generated by property taxes.

- Although the growth in Fountain Valley's retail and service receipts has kept pace with, or exceeded, the growth rates of the surrounding region, its volume continues to be overshadowed by Costa Mesa, Westminster, and Huntington Beach, which benefit from the presence of regional malls and major auto dealer clusters.

TABLE 7.
TAXABLE SALES IN RETAIL STORES
FOUNTAIN VALLEY AND SURROUNDING CITIES

City	Total Taxable Sales in Millions				1984-89 Annual Cmpd. Growth Rate (%)
	1984	1986	1988	1989	
Fountain Valley	$ 222.5	$ 237.3	$ 277.3	$ 334.3	8.5%
Costa Mesa	1,209.3	1,372.0	1,681.8	1,819.5	8.5 %
Garden Grove	644.4	731.7	876.2	910.6	7.2 %
Huntington Beach	1,013.5	1,212.7	1,229.1	1,331.6	5.6 %
Santa Ana	1,210.4	1,382.8	1,669.6	1,717.2	7.2 %
Westminster	576.1	586.3	655.8	673.8	3.2 %
Orange County Total	$ 11,978.9	$ 13,720.8	$ 16,105.9	$ 17,447.5	7.8 %

Source: Calculations by Urban Research Associates based on California State Board of Equalization reports, Taxable Sales in California.

TABLE 8.
TAXABLE SALES IN SERVICE FIRMS & MANUFACTURERS
FOUNTAIN VALLEY AND SURROUNDING CITIES

City	Total Taxable Sales in Millions				1984-89 Annual Cmpd. Growth Rate (%)
	1984	1986	1988	1989	
Fountain Valley	$ 63.4	$ 78.6	$ 96.0	$ 112.2	12.1 %
Costa Mesa	283.8	403.2	461.6	460.9	10.2 %
Garden Grove	212.3	253.9	304.9	279.5	5.7 %
Huntington Beach	199.3	242.6	292.5	297.6	8.3 %
Santa Ana	735.3	783.3	950.5	959.2	5.5 %
Westminster	62.2	81.2	86.1	89.9	7.6 %
County Total	6,552.2	7,601.4	9,302.8	9,973.0	8.8 %

Source: California State Board of Equalization reports, Taxable Sales in California.

TABLE 9.
AVERAGE PER CAPITA SALES IN RETAIL STORES
FOUNTAIN VALLEY AND NEIGHBORING CITIES

City	Average Per Capita Taxable Sales 1984	1986	1988	1989	1984-89 Annual Cmpd. Growth Rate (%)
Fountain Valley	$ 4,010	$ 4,286	$ 4,958	$ 5,943	8.2 %
Costa Mesa	13,936	15,423	18,203	19,397	6.8 %
Garden Grove	4,916	5,482	6,512	6,743	6.5 %
Huntington Beach	5,586	6,535	6,530	7,002	4.6 %
Santa Ana	5,422	6,102	7,123	7,256	6.0 %
Westminster	7,260	8,012	8,917	9,183	4.8 %
Orange County Total	$ 5,720	$ 6,324	$ 7,128	$ 7,575	5.8 %
Index of Fountain Valley to Orange County: (par = 100)	70.1	67.8	69.6	78.5	

Note: All figures are expressed in current dollars

Source: California State Board of Equalization reports, Taxable Sales in California, and California Department of Finance, Demographic Research Unit. Calculations by Urban Research Associates.

TABLE 10.
RETAIL SALES MIX IN FOUNTAIN VALLEY AND ORANGE COUNTY
1984 and 1989

Category	Fountain Valley		Orange County	
	1984	1989	1984	1989
Apparel	2.4 %	2.3%	4.9%	6.2%
General Merchandise	4.1	13.1	13.8	14.3
Drug Stores	4.6	4.3	2.1	1.9
Food Stores	21.1	10.9	8.5	6.8
Liquor Stores	1.1	0.8	1.4	1.0
Restaurants/Bars	14.5	15.9	13.1	12.6
Home Furnishings & Appliances	9.6	8.7	5.1	5.8
Bldg. Materials & Hardware	7.1	11.5	7.4	8.6
Auto Dealers & Suppliers	2.0	1.6	19.0	19.1
Service Stations	15.7	12.6	8.9	6.9
Misc. Retail Stores	17.9	18.4	15.9	16.9
TOTALS:	100.0%	100.0%	100.0%	100.0%

Source: California State Board of Equalization reports, Taxable Sales in California. Calculations by Urban Research Associates.

TABLE 11.
PER CAPITA RETAIL SALES BY MERCHANDISE LINE
FOUNTAIN VALLEY AND ORANGE COUNTY

Category	Fountain Valley 1984	Fountain Valley 1989	Orange County 1984	Orange County 1989
Apparel	$ 94	$ 136	$ 281	$ 470
General Merchandise	165	780	787	1,081
Drug Stores	184	253	121	141
Food Stores	846	649	486	517
Liquor Stores	45	46	79	73
Restaurants/Bars	581	942	752	955
Home Furnishings & Appliances	383	518	289	442
Bldg. Materials & Hardware	285	682	421	653
Auto Dealers & Suppliers	80	94	1,084	1,446
Service Stations	628	747	509	520
Misc. Retail Stores	718	1,096	912	1,277
Retail Total	4,010	5,943	5,720	7,575
Other Outlets	1,143	1,958	3,129	4,330
ALL TAXABLE SALES:	$5,153	$7,901	$8,849	$11,095

Note: Other outlets group includes service businesses and manufacturers which sell to final customers.

Source: Calculations based California State Board of Equalization. Taxable Sales in California (annual reports) and California Department of Finance, "Population and Housing Estimates for California Cities and Counties," E-5 reports.

Average sales levels per capita provide a clearer relative picture of local retailing since they control for any biases due to variations in city population size.

* Per capita taxable sales in Fountain Valley averaged $ 5,943 during 1989 compared to a countywide figure of $ 7,575.

* Neighboring cities which are home to regional shopping malls and other high volume businesses achieve per capita sales levels of 20 to 60 percent more than Fountain Valley. The scale and consumer draw of South Coast Plaza and major auto dealers propel Costa Mesa's sales to even greater heights (Figure 2).

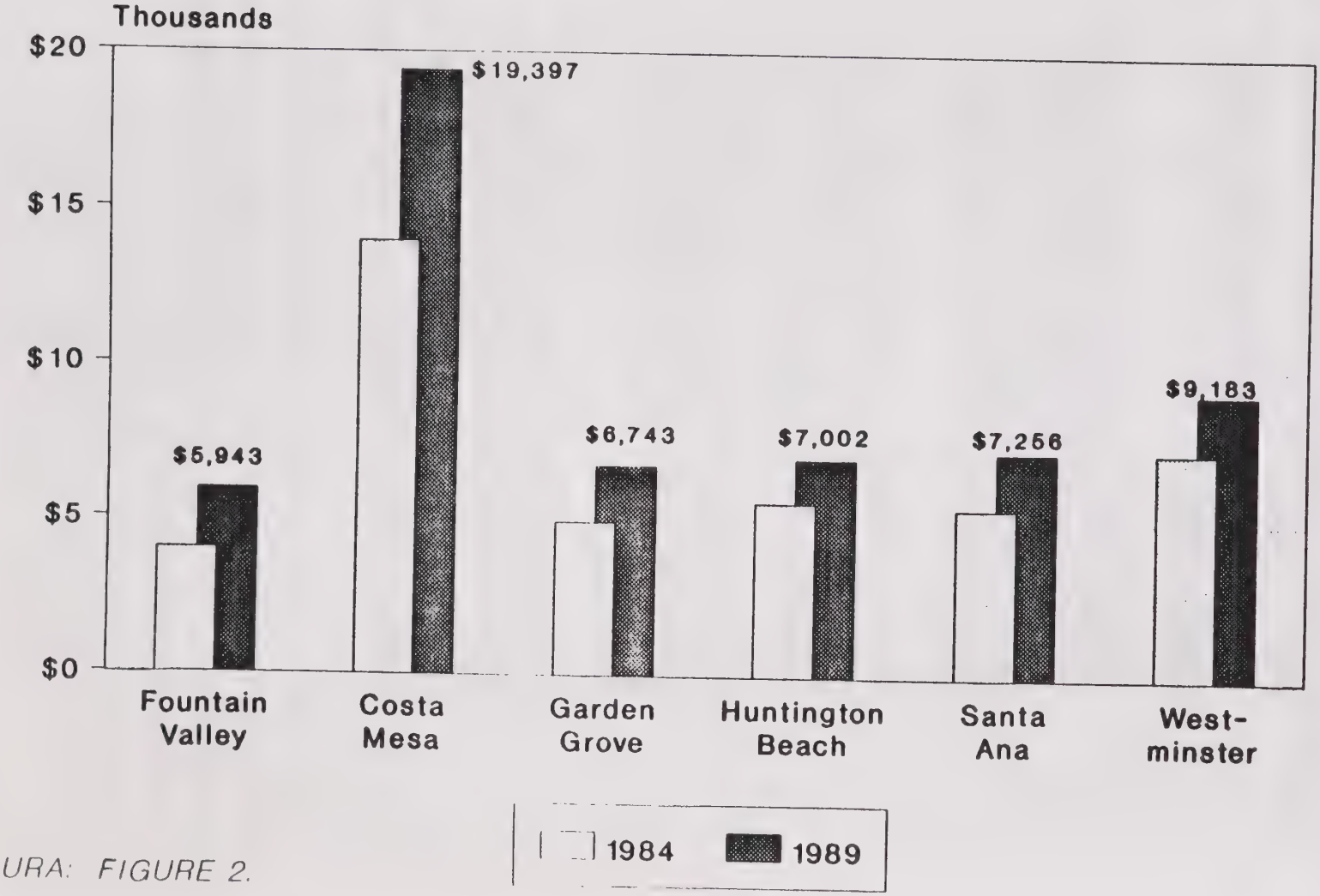
* Reviewing the sales record for 1987, Alfred Gobar Associates observed that Fountain Valley achieved only 67 percent of the retail sales potential "consistent with [its] population base."

* By the close of 1989 that gap had been narrowed to a ratio 78 percent of the market potential, underscoring the importance of the openings of Pace, Price Club, Callen's Corner, Med Choice, and Soft Warehouse.

* As the Auto Giant (replacing the closing HQ Office supplies) and more shops at Callen's Corner and in the Promenade Center open, the city/county disparity will be reduced even further. The release of sales figures for calendar 1990 in July or August of 1991 undoubtedly will bear that out.

Fountain Valley's commercial land uses clearly serve the local demand for most basic goods and services quite well. Four retail sectors in particular display strong economic health when comparisons are standardized against the Orange County profile. (See Tables 10 and 11.)

PER CAPITA RETAIL STORE SALES
SOUTH CENTRAL ORANGE COUNTY CITIES



URA: FIGURE 2.

* Leading categories in Fountain Valley's commercial economic base as measured by relative per capita sales include:

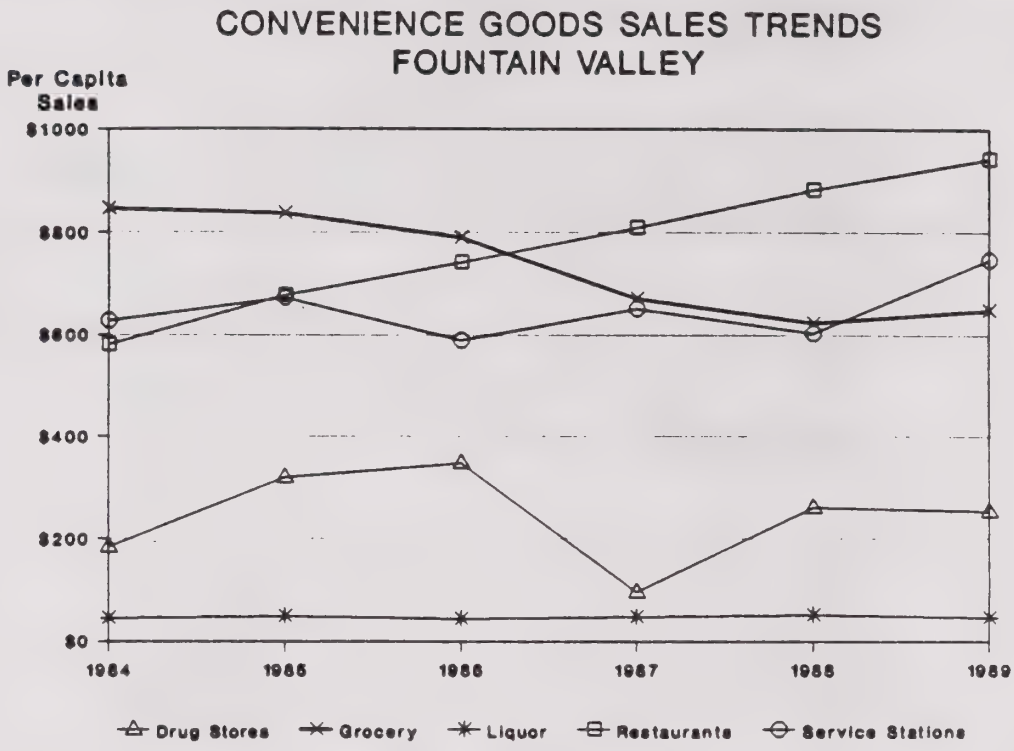
  Drug Stores -- 1.79 times county average
  Grocery Stores -- 1.26 times county average
  Home Furnishings/Appliances -- 1.17 times county average
  Service Stations -- 1.44 times county average

* Viewed another way, the combination of these four basic functions account for 37 cents of every taxable sales dollar in the city. Due to the greater diversification of retailing countywide, these categories contribute just 21 cents out of each sales dollar in Orange County.

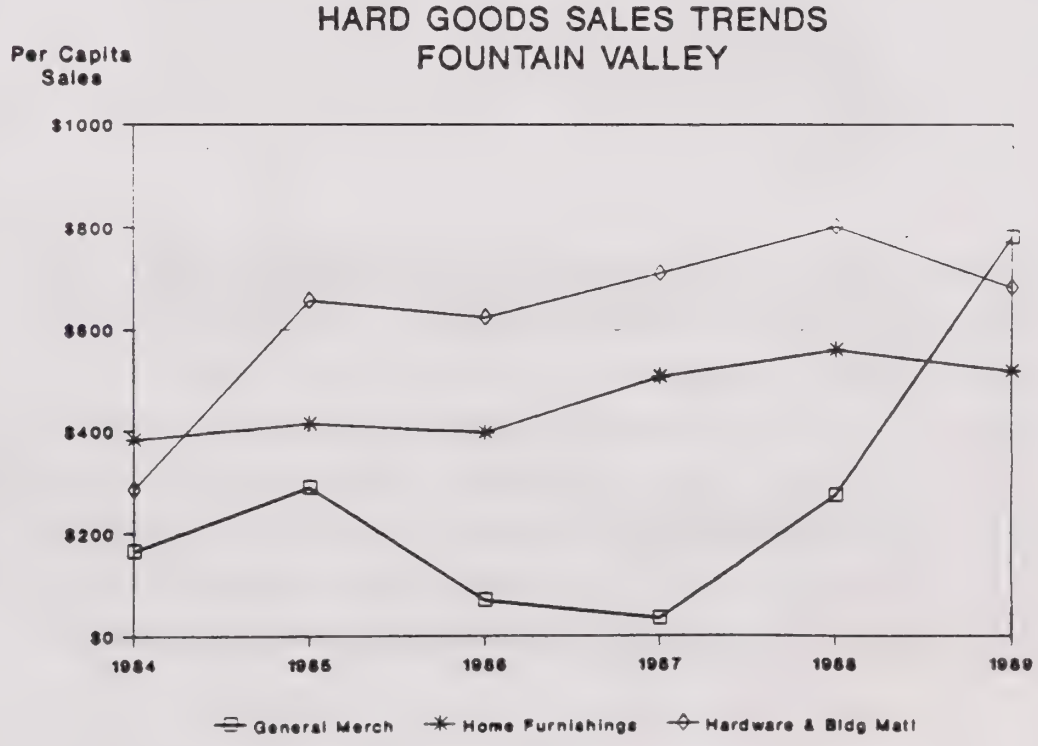
* One should note that when controlled for population changes, the sales in Fountain Valley's grocery sector have actually declined by 23 percent since the mid-1980s. In large measure this reflects a diversion of grocery shopping away from the major chains to the new discounters, Pa[illegible] and the Price Club. (Shown graphically in Figures 3 and 4)

* Per capita sales trends for the latest five year reporting period reveal sharp gains in not only the general merchandise sector (up 373 %) but also in the building materials/hardware group (139%), restaurants (up 62%), and the specialty stores category (up 53%).

The major expansion of shopping opportunities within Fountain Valley since 1986 has significantly bolstered the local economy and its contributions to the flow of tax dollars. Except for some negative impacts on grocery outlets, the impacts of new retail and service businesses for the most part have been very positive. The added stores in such new centers as Harbor Plaza (Farr's), Callen's Corner, the Promenade, and the Soft Warehouse and Staples, not only improved services to adjacent neighborhoods but have also begun to attract sales dollars from businesses and residents outside Fountain Valley.



URA: FIGURE 3.



URA: FIGURE 4.

Competition and Sales Leakage Analysis

An analysis of potential sales dollar flows both into and out of a community further clarifies the strong and weak economic sectors. When coupled with locational information on major centers it may be used to define key economic development opportunities. Retail modelling, in the form of leakage analysis, compares the actual sales achieved within Fountain Valley with the demand potential generated by local consumers.

Household shoppers who reside in northern Huntington Beach and southern Garden Grove do patronize some Fountain Valley businesses, particularly grocery outlets and the discount warehouses. Similarly, business and industrial firms located in Santa Ana's South Harbor industrial area bring dollars to the Price Club and its adjoining restaurants. However, the dollar value of potential sales which flow outward from Fountain Valley far exceeds those cash infusions (Table 12):

* Valuable net surpluses, or inflows, support grocery, drug, and service station businesses. To a large extent, that arises from the placement of certain shopping centers near the fringe of Fountain Valley's borders and from the strong family structure of surrounding residential areas. It also reflects the transfer of spending patterns for some goods into drug/variety stores in the absence of general merchandise stores.

* Local office employment and outcommuters also make substantial contributions to the city's service stations and to restaurants along Brookhurst.

* Combined losses of sales potential now amount to $ 78.3 million annually. Phrased another way, Fountain Valley retail and service firms obtain a "net capture" of about four-fifths of the local in-city market demand.

* That represents a major improvement over the $ 126.3 million net "outleakage" reported for 1987 by Alfred Gobar Associates.

TABLE 12.
SALES INFUSION AND LEAKAGES
IN FOUNTAIN VALLEY RETAIL SECTOR

Category	1989 Market In Millions Demand Potential	Actual Sales	Net Inflows (+) or Outflows (<>) in Millions
Apparel	$ 25.60	$ 7.63	<$ 17.99 >
General Merchandise	58.89	43.90	< 14.99 >
Drug Stores	7.68	14.24	6.56
Grocery Stores	28.16	36.51	8.35
Packaged Liquor	3.98	2.59	< 1.39 >
Restaurants & Bars	52.02	53.01	0.99
Home Furnishings & Appliances	24.08	29.12	5.04
Building Material & Hardware	35.57	38.39	2.82
Auto Dealers & Suppliers	78.77	5.31	< 73.46 >
Service Stations	28.33	42.01	13.68
Misc. Retail Stores	69.56	61.64	< 7.92 >
ALL RETAIL STORES	$ 412.64	$ 334.35	<$ 78.29 >

Source: Demand modeling by Urban Research based on California Department of Finance and State Board of Equalization data.

* Substantial deficit flows still characterize the apparel, general merchandise group, and auto sales and automotive suppliers. This reflects a $ 106 million shadow of regional malls and major auto dealers reaching into the Fountain Valley market.

Retail Centers and Strips: Promise and Concerns

Fountain Valley's commercial land uses effectively serve the basic daily needs of most local residents and of businesses as well. The neighborhood and community-level retail centers are abundant, widely distributed, generally well-maintained and, in most cases, enjoy strong patronage. As of this writing, the city contains nineteen major retail centers, virtually all of which are anchored by either a supermarket, drug/variety store or both. Anchor stores in the newest centers, Promenade and second phase of Callen's Corner, have opened and the specialty tenants are quickly coming on line (Table 13).

At first glance there might appear to be some redundancy in the neighborhood-serving retail sector. However, most anchored centers in that group have steady streams of customers. Rarely does one find more than a single vacancy --- the chief exception to that being Magnolia Center ("G" on Figure 5). Some are plagued by superfluous parking areas, a few are so small as to be easily overlooked, and still others need maintenance attention. The extent of these concerns at particular locations and possible policy options will be considered under the final section of the report.

The city recently gained several larger commercial centers, which substitute for the absence of an historic downtown or major retail complex. Their larger general merchandise tenants and distinctive specialty shops draw from a city-wide market and from neighborhoods in adjoining cities. Hence, they may be classified as "community-level" centers. Five stand out among that group: the Westhaven Plaza, Brookhurst Plaza (Pace), Callen's Corner/Promenade, the Fountain Center Plaza plus its northerly extension, and the Price Club cluster

TABLE 13.
FOUNTAIN VALLEY RETAIL CENTERS

Map ID	Center Location	Type	Number Stores/Vacant	Major Tenants
A	Magnolia & Edinger SE Corner	N	19/1	Albertson's Market
B	Westhaven Plaza SW Corner Edinger & Brookhurst	C	35/1	Home Club Drug Emporium Edwards Cinema
C	Mile Square Plaza SW Corner Brookhurst & Heil	N	32/4	Italiano Primavera
D	Harbor & Edinger NW Corner	N	16/2	Vacant Major Tenant Trak Auto Thrifty Von's Market
E	Harbor Plaza SW Corner Harbor & Edinger	N	21/2	Farr's Hallmark
F	Magnolia & Warner SW Corner of	C	26/1	Alpha Beta Thrifty Jr.
G	Magnolia & Warner NE Corner	Sp	2/0	Office HQ

Continued...

TABLE 13. (continued)
FOUNTAIN VALLEY RETAIL CENTERS

Map ID	Center Location	Type	Number Stores/Vacant	Major Tenants
H	Magnolia Center SE Corner Magnolia & Warner	N	15/4	Sav-On 2 Vacant Large Modules Performance Bike Shop
I	Brookhurst Plaza SW Corner Brookhurst & Warner	Sp	27/1	Pace Wherehouse Movie Theater
J	Builder's Emporium NE Corner Brookhurst & La Alameda	FS	-	Builder's Emporium
K	Warner & Euclid NE Corner	N	19/0	Stater Bros Round Table Pizza
L	Village Center NE Corner Magnolia & Talbert	N	19/0	Miller's Outpost Thrifty
M	Fountain Valley Plaza SE Corner Brookhurst & Talbert	N	26/0	Albertson's Cline's Hallmark
N	Price Club NW Corner Talbert & Newhope	Sp	3/0	Price Club
O	Promenade NW Corner Brookhurst & Ellis	C	39/20	Ralph's Payless Drugs T.J. Maxx

Continued...

TABLE 13. (continued)
FOUNTAIN VALLEY RETAIL CENTERS

Map ID	Center Location	Type	Number Stores/Vacant	Major Tenants
P	Callen's Corner SW Corner Brookhurst & Ellis	C	52/11	Lucky's CVS Pharmacy
Q	Magnolia Plaza NE Corner Magnolia & Garfield	N	15/0	Hughes Market
R	Fountain Center Plaza E Side Brookhurst, N of Garfield	N	22/3	The Hop Turner's
S	Brookhurst & Garfield NE Corner	N	38/3	Ebisu Market

Center Types: N - Neighborhood Level
C - Community Level
Sp - Specialty
FS - Free Standing

Source: Field survey by Urban Research Associates, October/November 1990.

TABLE 14.
NEIGHBORING COMMERCIAL CENTERS
OUTSIDE FOUNTAIN VALLEY CITY LIMITS

Map ID	Center Location	Type	Number Stores/Vacant	Major Tenants
1	Huntington Center NW Corner Beach & Edinger Huntington Beach	R	74/8	Broadway Mervyn's Montgomery Wards JC Penney Circuit City
2	Un-named Center NW Corner Brookhurst & McFadden Westminster	N	6/0	Ralph's Clarke Drugs
3	Un-named Center SW Corner Brookhurst & McFadden Westminster	Sp	18/7	Miller's Outpost
4	Valley Center NE Corner Edinger & Euclid	N	34/12	Food Depot
5	Pavillion Shopping Center NE Corner Beach & Heil Westminster	C	53/6	Target Vons
6	Un-named Center NE Corner Beach & Terry Huntington Beach	Sp	14/2	Marshalls The Good Guys

Continued . . .

TABLE 14. (continued)
NEIGHBORING COMMERCIAL CENTERS
OUTSIDE FOUNTAIN VALLEY CITY LIMITS

Map ID	Center Location	Type	Number Stores/Vacant	Major Tenants
7	Beach-Garfield Center SW Corner Beach & Garfield Huntington Beach	N	16/4	Ralphs Sav-On
8	Newland Center NE Corner Beach & Adams Huntington Beach	N	35/0	Lucky
9	Un-named Center NE Corner Magnolia & Adams Huntington Beach	Sp	20/6	Sears Outlet Bills California Market
10	Un-named Center SE Corner Magnolia & Adams Huntington Beach	N	20/2	Liquor Barn Payless Drugs
11	Un-named Center NW Corner Adams & Brookhurst Huntington Beach	C	23/1	Mervyn's LA Tronics Thrifty
12	Un-named Center SW Corner Brookhurst & Adams Huntington Beach	FS	-	Target

Continued . . .

TABLE 14. (continued)
NEIGHBORING COMMERCIAL CENTERS
OUTSIDE FOUNTAIN VALLEY CITY LIMITS

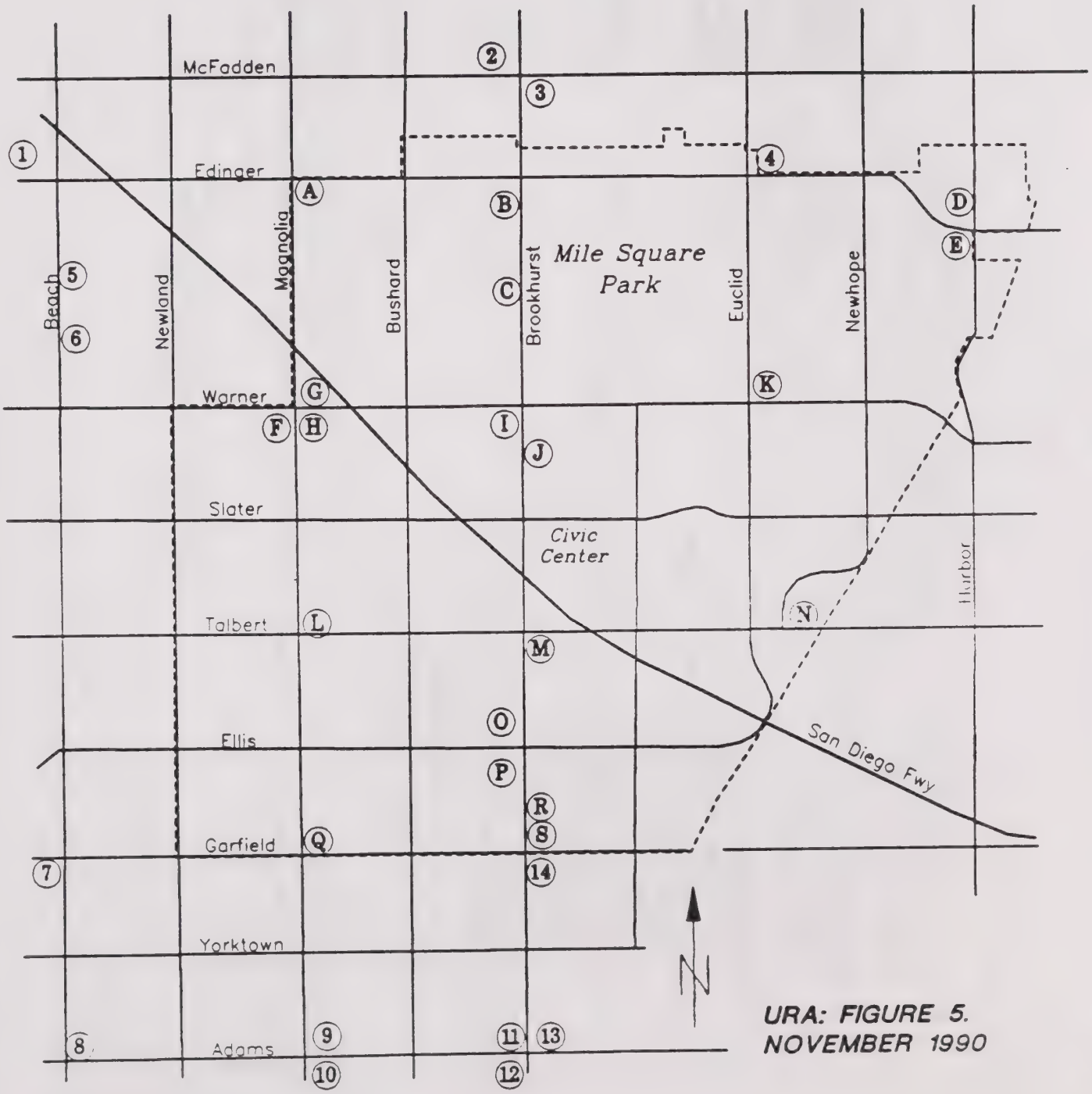
Map ID	Center Location	Type	Number Stores/Vacant	Major Tenants
13	Un-named Center NE Corner Brookhurst & Adams Huntington Beach	N	25/1	Cloth World Sav-On Drugs
14	Un-named Center SE Corner Brookhurst & Garfield Huntington Beach	N	20/3	Vacant Major

Center Types: N - Neighborhood Level
C - Community Level
R - Regional
Sp - Specialty
FS - Free Standing

Source: Field survey by Urban Research Associates, September/October 1990.

EXISTING MAJOR SHOPPING CENTERS

FOUNTAIN VALLEY AND VICINITY



URA: FIGURE 5.
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in Southpointe. Although no competitive stresses have surfaced as yet, the retail clusters along Brookhurst south of the freeway should be monitored periodically for their tenant stability and general fiscal performance.

The commercial land use structure also includes a plethora of smaller, unanchored or strip retail centers. Our field reconnaissance identified thirty such clusters, with half fronting along either Warner or Talbert (Table 15). Typically subdivided into from three to a dozen stores, these generally provide convenience groceries, pizza, personal care salons (nails and hair care) and specialty services.

Their collective role in the urban economic scene often is problematic for a number of reasons. Specific cases may illustrate:

Unkempt Appearance
Difficulties of Access and or Parking
Erratic Tenant Turnover
Noticeable Vacancies
Limited Contribution to City Revenues

The larger strips can also divert potential sales from key tenants at higher-order shopping centers, including supermarkets and restaurant chains. In their defense, the unanchored commercial strips offer the lower rents necessary to sustain many types of services which cannot afford the newer, planned centers, promote walking-distance accessibility for adjacent residents, and foster small business entrepreneurialism.

TABLE 15.
STRIP CENTERS & UNANCHORED RETAIL CLUSTERS
FOUNTAIN VALLEY

Location	Tenant Modules	Key Tenants
SE cor. Lilac & Harbor	11	Danny's Market & Video
16086 - 16192 Harbor	5	B of A, Goodyear
16475 A-C Harbor	3	7-Eleven
Golden Triangle Center	12	Liquor-Deli
16034-16040 Newhope	3	Liquor-Deli
9895 A-G Warner	7	
10130 - 10150 Warner	13	Stop-N-Go, Lamppost
10810 - 10830 Warner	11	Hunny's Restaurant
10950 - 10980 Warner	9	7-Eleven
9555 Warner	1	Liquor-Deli
9025 A-E Warner	5	Chez Elle
8550-8610 Warner	12	Shakey's Pizza
8744-8780 Warner	14	Bicycle Discovery
9431 - 9475 Heil	12	Parts Unlimited
SW cor. Warner & Bushard	16	Softwarehouse, Sizzler
9520 A-D Warner	4	
16927-16953 Bushard	7	Bushard Market
17050 Newland	1	Alta Dena Drive-thru
NW cor Magnolia & Garfld.	11	Circle K
9525-9555 Garfield	15	Southland Ballet Acad.
NE cor. Ellis & Ward	7	City Office Furniture
17925-17955 Magnolia	7	La Paz Liquor-Deli
SW cor Magnolia & Talbert	16	Super Toy City
SE cor Magnolia & Talbert	8	Yamada Music
SE cor Ellis & Brookhurst	3	Pet Hospital, 7-Eleven
10529-10585 Slater	11	7-Eleven
9520 Talbert	1	Pacific Decorating Ctr.
SW cor Talbert & Bushard	3	Taco Bell
17431 A-K Brookhurst	8	T.J.'s Liquor
Mariposa Plaza	21	The Video Giant

Source: Field survey by Urban Research Associates, November 1990.

IV. MUNICIPAL FINANCE AND REDEVELOPMENT

The flow of local government revenues provides a key indicator of the manner in which population characteristics, land use patterns, and business performance jointly promote local economic development. In turn, those flows shape the public services made available to Fountain Valley residents. Since the existing conditions and future General Plan policies are grounded in the fiscal health of city government, it is appropriate to analyze City's revenue sources and mix of expenditures.

With the assistance of the City of Fountain Valley Finance Department, URA has compiled revenue and expenditure summaries for the fiscal years 1984-85 and 1989-90. Because that evidence reflects actual receipts and true dollars spent, rather than budgeted amounts, an unambiguous picture emerges of the key fiscal components and recent trendlines. Funds collected and dispersed through the redevelopment process (Agency for Community Development) are considered separately.

Municipal Revenues

Tables 16 and 17 summarize the City's revenue accounts during each of those two study years.

- Total receipts rose by 53 % between FY 1985 and FY 1990, reaching $ 20.8 million in the latter year.
- Virtually all of the gains may be attributed to new construction and taxes generated by expanded business and industrial activity and inflation.
- Property taxes account for just 20% of total municipal revenues, a proportion toward the low end for similar sized California cities.
- In contrast, sales taxes and other business-related fees (lines 2 and 3 in Table 16) contribute 33.9%.
- Special reports from the City reveal that Fountain Valley's Water Enterprise Fund generates as much income annually as do property taxes.

TABLE 16.
MUNICIPAL REVENUE SUMMARY
CITY OF FOUNTAIN VALLEY

Category	Receipts in Thousands FY 1984-85	FY 1989-90
1. Property Taxes	$ 2,801.4	$ 4,196.3
2. Sales and Use Taxes	3,415.0	5,656.3
3. Other Taxes	865.6	1,405.3
4. Licenses and Permits	538.8	427.8
5. Fines Forfeits, and Penalties	214.3	298.3
6. Interest and Rents	596.1	1,102.6
7. Intergovernmental Transfers	1,306.1	2,822.1
8. Service Charges	1,741.5	3,750.8
9. Other Revenues	1,037.6	95.9
TOTAL REVENUES	12,516.4	19,755.3
10. Other Financing Sources	1,141.8	1,071.5
TOTAL REV & OTHER SOURCES	$ 13,648.2	$ 20,826.8

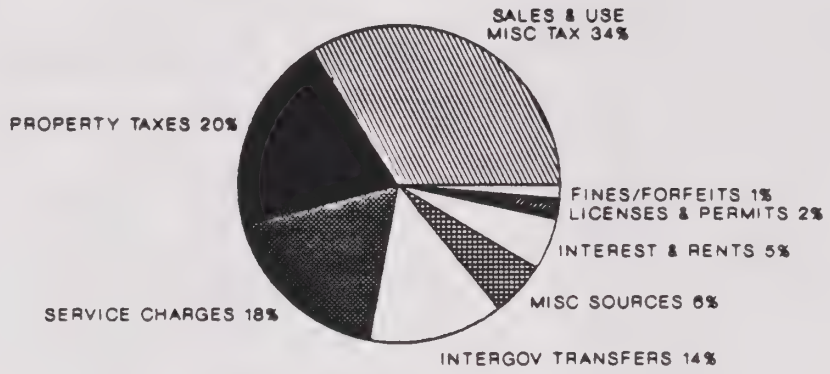
Source: Fountain Valley Comprehensive Annual Financial Report, Fiscal Year 1984-85 and memorandum from Liz Fox to Urban Research Associates, October 1990.

TABLE 17.
SHARES OF MUNICIPAL REVENUE SOURCES
CITY OF FOUNTAIN VALLEY

Category	FY 1984-85	FY 1989-90
Property Taxes	20.5 %	20.1 %
Sales and Use Taxes	25.0	27.2
Other Taxes	6.3	6.7
Licenses and Permits	3.9	2.1
Fines Forfeits, and Penalties	1.6	1.4
Interest and Rent	4.4	5.3
Intergovernmental Transfers	9.6	13.6
Service Charges	12.8	18.0
Other Revenues	7.6	0.5
TOTAL REVENUES	91.7	94.9
Other Financing Sources	8.3	5.1
TOTAL REVENUES & OTHER SOURCES	100.0 %	100.0 %

Source: Fountain Valley Comprehensive Annual Financial Report, Fiscal Years 1984-85 and memorandum from Liz Fox to Urban Research Associates, October 1990.

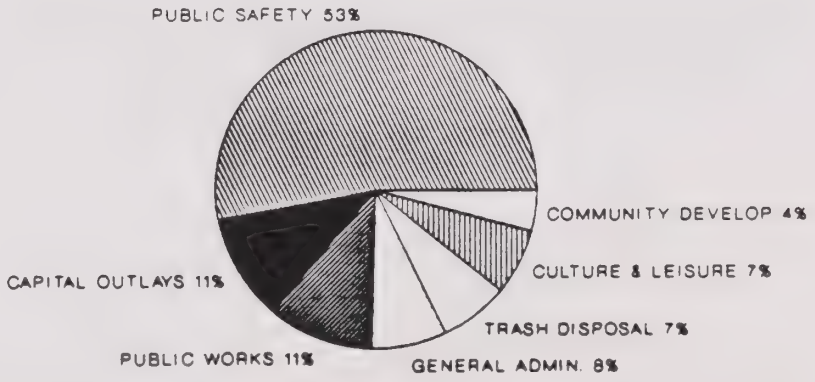
MUNICIPAL REVENUES FISCAL 1989-90
CITY OF FOUNTAIN VALLEY



Total Revenues: $ 20.8 Million

URA: FIGURE 6.

MUNICIPAL EXPENDITURES FISCAL 1989-90
CITY OF FOUNTAIN VALLEY



Total Expenditures: $ 20.3 Million

URA. FIGURE 7.

* Receipts from other governmental agencies continue to be significant, particularly flows from the state and the joint City-County Improvement Authority.

The revenue data points out that a multitude of income streams support city functions in Fountain Valley. Figures also reveal the dependency of local government on the health of its business sector, water fund service charges, and intergovernmental transfers.

Municipal Expenditures

Expenditures for local services and capital improvements cannot be interpreted as easily as receipts because some accounts include "set asides" for reserves or equipment replacement. In addition, transfers between accounts and across funds (eg., from the Capital Projects Fund to the General Fund) further complicate the overall picture for the general reader.

Highlights from the expenditure summaries provided in Tables 18, 19, and 20 include the observations that:

* Fountain Valley's municipal spending has increased more rapidly than has revenues. Proportionately, the largest gains have been allocations for capital outlays and community development.

* Three major categories consume three-fourths of all local government spending:

Public Safety	53 %
Public Works/Transport.	11 %
Capital Outlays	11 %

TABLE 18.
MUNICIPAL EXPENDITURE SUMMARY
CITY OF FOUNTAIN VALLEY

Category	Expenditures in Thousands FY 1984-85	FY 1989-90
1. General Administration	$ 1,174.5	$ 1,527.1
2. Public Safety	6,751.9	10,706.1
3. Public Works/Transp.	1,738.7	2,152.4
4. Community Development	339.6	838.8
5. Trash Disposal	1,037.1	1,423.8
6. Culture and Leisure Serv.	888.4	1,371.0
7. Capital Outlay	387.2	2,233.5
TOTAL EXPENDITURES	$ 12,317.3	$ 20,252.5

Source: Fountain Valley Comprehensive Annual Financial Report, Fiscal Years 1984-85 and memorandum from Liz Fox to Urban Research Associates, October 1990.

TABLE 19.
SHARES OF MUNICIPAL EXPENDITURES
CITY OF FOUNTAIN VALLEY

Category	FY 1984-85	FY 1989-90
General Administration	9.5 %	7.5 %
Public Safety	54.8	52.9
Public Works/Transpor.	14.1	10.6
Community Development	2.8	4.1
Trash Disposal	8.4	7.0
Culture and Leisure Serv.	7.2	6.8
Capital Outlay	3.1	11.0
TOTAL EXPENDITURES	100.0 %	100.0 %

Source: Fountain Valley Comprehensive Annual Financial Report, Fiscal Years 1984-85 and memorandum from Liz Fox to Urban Research Associates, October 1990.

TABLE 20.
AVERAGE PER CAPITA EXPENDITURES
CITY OF FOUNTAIN VALLEY

Category	Per Capita Spending FY 1984-85	FY 1989-90
General Administration	$ 21.13	$ 27.09
Public Safety	121.48	189.88
Public Works/Transp.	1.28	38.17
Community Development	6.11	14.88
Trash Disposal	18.66	25.25
Culture and Leisure	15.98	24.32
Capital Outlay	6.97	39.61
TOTAL EXPENDITURES	$ 221.61	$ 359.20
1985 Population:	55,580	
1990 Population:	56,382	

Source: Fountain Valley Comprehensive Annual Financial Report, Fiscal Years 1984-85, memorandum from Liz Fox to Urban Research Associates, October 1990, and California Department of Finance, "Population and Housing Estimates for California Cities and Counties," E-5 reports.

* Approximately two-thirds of the public safety dollars go toward police services.

* Capital improvements have experienced an increased share of outlays, reflecting greater attention to flood control and drainage improvements.

* Spread across the total city population, municipal expenditures have risen moderately (10.1 % per year compounded) since the mid-1980s:

Per Capita FY 1985	$ 222
Per Capita FY 1990	$ 359

The local governmental fiscal condition in Fountain Valley rests on a solid commercial/industrial base and above-average housing values. Yet, demands for high quality, extensive services and upgrading of the local infrastructure push the City toward drawing on its reserve funds.

Jurisdictional comparisons with neighboring, or similar type, cities in Orange County further illuminate the city's financial status. Table 21 indicates that Fountain Valley's governmental programs cost less, on a per capita basis than do those in other area communities. The average per capita expenditure figure in Fountain Valley was comparable to that in Westminster and Garden Grove but fully 28 percent less than in Huntington Beach and 44 percent below the spending level in Costa Mesa. Even though receipts exceed expenditures in many cities, it is not uncommon for reserves to be tapped and for supplemental funding to come from redevelopment agencies, particularly when major projects are launched.

Redevelopment Review

Among California's medium-sized or larger cities (those with populations above 50,000), fully nine out of ten operate redevelopment programs. Not restricted to distressed cities, redevelopment has been widely applied as a vital tool for municipal finance and economic promotion. For example, Brea's creation of a

TABLE 21.
GOVERNMENTAL FISCAL PROFILES
FOUNTAIN VALLEY AND REFERENCE CITIES

City	Population Jan. 1989	Per Capita Amounts Expend.	Revenue
South Central Cities:			
Fountain Valley	56,145	$ 398	$ 425
Costa Mesa	92,893	$ 705	$ 683
Garden Grove	134,801	$ 416	$ 418
Huntington Beach	188,701	$ 552	$ 614
Santa Ana	237,348	$ 576	$ 611
Westminster	73,338	$ 390	$ 417
Other Orange County Cities:			
Buena Park	66,207	$ 481	$ 505
Cypress	45,360	$ 273	$ 317
Placentia	41,639	$ 303	$ 285
Yorba Linda	47,914	$ 505	$ 450

Note: Financial data are for 1988-89 Fiscal Year, the latest period for which comparative data are available. Population figures are January 1, 1989 estimates.

Source: Calculations by Urban Research Associates based on input data from the California Department of Finance, Population Research Unit, Series E-5 reports and California State Controller, Annual Report of Financial Transactions Concerning Cities of California, Fiscal Year 1988-89 (September 1990).

bustling retail and office employment hub and Huntington Beach's intensification of condominium housing in its downtown core are just two examples of the orientations of the nearly fifty redevelopment project areas located in Orange County.

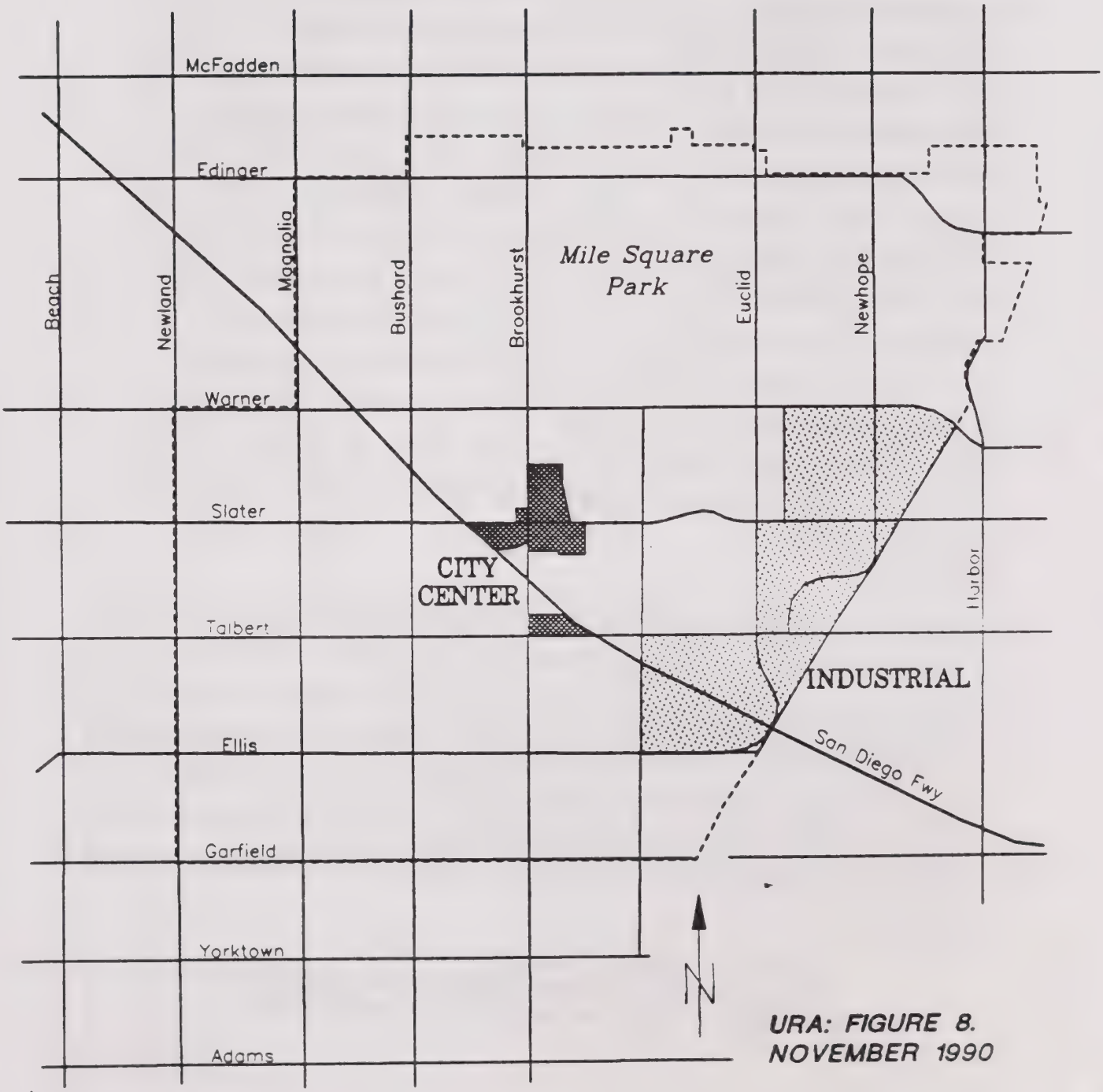
Fountain Valley organized its redevelopment body, the Agency for Community Development, in August of 1975. By the close of the following year, the Agency adopted redevelopment plans for two areas, the City Center and the Industrial Area, adjacent to the Santa Ana River channel (Figure 8). Together, these cover almost 700 acres. Both of Fountain Valley's project areas displayed selected forms of economic disuse, drainage problems, and circulation challenges to be remedied. Two tax allocation bonds, amounting to $ 34 million, were issued in 1985 to finance those needs. Economic development payoffs from that investment are beginning to materialize, particularly in the form of business and industrial attraction to former vacant lands in the Southpark section of the Industrial Project Area. However, efforts to reshape industrial and home furnishings retail uses south of Talbert have been hampered by long-term tenant leases and high land costs for any potential acquisition.

Similar to many other southern California cities, Fountain Valley has recognized the pivotal role of commercial and industrial development in expanding city revenues and in generating tax streams necessary to repay those capital improvement debts. In the highly competitive economic system of Orange County, it is often necessary to assist major firms to locate or expand their operations within a given community. The city's Agency for Community Development has supported such key private developments through a variety of mechanisms:

Marriott Corporation - land cost writedown
Hyundai Motor America - payment of development fees
Price Club - land cost writedown & sales tax rebate

REDEVELOPMENT PROJECT AREAS

CITY OF FOUNTAIN VALLEY



URA: FIGURE 8.
NOVEMBER 1990

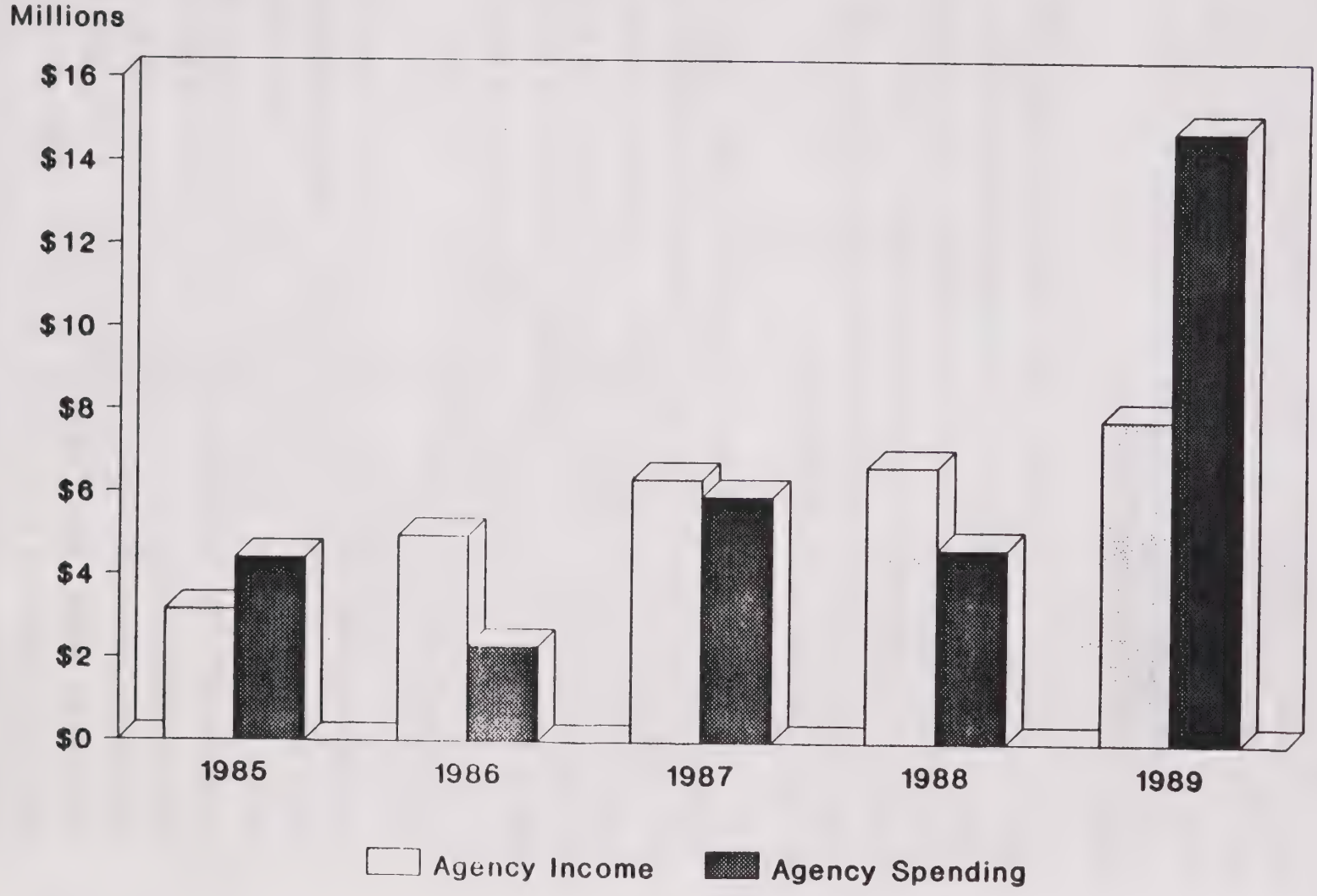
According to municipal financial statements, those three agreements alone represented a $ 10.5 million investment by the Agency in Fountain Valley's economy. The increased property taxes, sales taxes, and transient occupancy (hotel room) taxes generated by these particular developments are anticipated to repay that assistance with substantial funds left over for ongoing agency obligations and to support future projects.

Direct investment by the Agency in projects accelerated following the bond issues in 1985. Since mid-decade, it has committed approximately $ 32.1 million to redevelopment in Fountain Valley (Figure 9). Concurrently, agency receipts have totaled $ 28.9 million as shown in Table 22. Note that a third of all expenditures represent a one-time write down taken during fiscal 1989 for the value of land resales to commercial projects.

The general pattern of fiscal shortfall is not a cause for concern, particularly as the major income-generating land uses (eg., the Price Club and the soon-to-be-completed two Marriott hotels) came on-line only recently or have yet to start producing cash flows. Moreover, one must be mindful that the state's redevelopment finance laws require that each agency maintain an indebtedness in order to operate. Once an agency's debts are repaid it must dissolve as a policymaking and financing body.

As important as the redevelopment activity has been for Fountain Valley, it should be interpreted in the context of analogous redevelopment/community development efforts within the general region. The bulk of redevelopment in Orange County for the past decade has entailed financing to promote either job creation, commercial sales tax expansion, or increased dollars from property taxes on new commercial and industrial ventures. Because all jurisdictions vie for the most lucrative and visible of these projects, each must invest in community development just to remain competitive. Based on audit reports filed with the state, most of Fountain Valley's neighbors (and competitors)

FOUNTAIN VALLEY COMMUNITY DEVELOPMENT
FY 1985 - FY 1989



URA: FIGURE 9.

TABLE 22.
FOUNTAIN VALLEY REDEVELOPMENT FUNDING
1985-89 TOTALS

Category	1985-1989 Total
REVENUES	
Tax Increment	$ 17,403,400
Interest Income	10,640,800
Other Revenues	870,500
Total Revenues	$ 28,914,700
EXPENDITURES	
Admin/Prof Serv	$ 1,756,900
Real Estate Purchases	74,600
Project Construction	4,627,800
Loss On Land Acquisitions	10,491,600
Rehab Loans/Grants	580,600
Interest On Debt	9,915,300
Debt Principal Payment	4,386,400
Other Expenditures	226,400
Total Expenditures	$ 32,059,500

Source: California Office of the State Controller, Annual Report of Financial Transactions Concerning Redevelopment Agencies of California, Fiscal years 1984-1985 to 1988-1989.

allocated substantial sums to redevelopment over the course of the 1980s:

Fountain Valley	$ 44.6 million
Costa Mesa	$ 46.5 million
Garden Grove	$ 107.9 million
Huntington Beach	$ 60.8 million
Santa Ana	$ 353.4 million
Westminster	$ 6.9 million

The flow of property tax increment marks the primary direct revenue stream from California redevelopment. Increment represents that share of increased taxes from new construction or higher assessed valuation on property resales within the project area after the base year of the area's redevelopment plan adoption. Among the above group of cities, only in Santa Ana ($ 21.8 million) and Garden Grove ($ 8.1 million) has redevelopment fostered a higher tax increment sum than in Fountain Valley ($ 4.0 million for FY 1989).

In sum, the support for local economic development provided by the city's Agency for Community Development has intensified in the past few years, focusing primarily on larger-scale private projects. It has nurtured several fiscal successes as evidenced by the surge in general merchandise sales and steadily increasing value of the commercial and industrial property tax base. Competition has intensified for the benefits of economic development and redevelopment in Orange County. Fountain Valley must now be vigilant to retain its important revenue-generating land uses and major employers while continuing to show flexibility in attracting advantageous business and industrial firms to its remaining vacant sites.

V. ECONOMIC DEVELOPMENT PROSPECTS AND CHOICES

The Fountain Valley economy has reached a level of maturity in which most components function productively and present a positive image. Newly completed retail centers along Brookhurst and in the Southpark section of the Industrial Redevelopment Project have already made tremendous strides toward reducing previous deficiencies in the city's economic development picture. Economic development actions in the city over the next two decades will revolve around fine tuning land use areas as outlined later in this section.

The dramatic cases where large-scale employers and high volume businesses are drawn to Fountain Valley will become infrequent events. The future lies not with additional major medical centers, AST and Hyundai operations, or Price Club/Pace retailers. In fact, the city should exercise care so as not to become dependent upon a few major businesses and institutions. Economic policy questions and possible general directions deal with the following broad themes:

* How can retail and service business sales leakages be recaptured in light of the close proximity of major regional malls and established corridors such as Edinger Avenue and Beach Boulevard?

* Can the city sustain the large number of smaller commercial centers indefinitely?

* How forceful should redevelopment efforts be in reshaping the land uses and appearance of the industrial wedge between Talbert and the 405 Freeway?

The review of retail performance indicators and commercial land use arrangements suggested that local market demands still were not being fully addressed in the apparel, general merchandise, appliance and automotive sectors. Some restaurant categories are also absent from Fountain Valley. Dominant retail constraints and opportunity areas include:

* Recent expansion of the Huntington Center Mall and ease of local access to South Coast Plaza, Westminster Mall, and secondary centers in northern Huntington Beach are major market limitations on securing another major general merchandise retailer.

* All the leading appliance and stereo outlets likewise are well established along Beach Boulevard and Edinger just west of the city. Attraction would prove most difficult without incentives.

* In terms of the automotive sector, an auto service/ repair cluster can bring strong fiscal benefits to the city. Strong design standards and use conditions would be appropriate. (The Fountain Valley Commercecenter on Harbor represents one prototype, though on a small scale.)

* Restaurants have long been considered as a potential use along Warner or Slater, east of the Medical Center. Major ethnic (Mexican, Japanese/Chinese) and seafood restaurants remain a rarity in Fountain Valley. Redevelopment assistance could be used to promote a three-to-four unit cluster.

* Development of a multiplex theater in the general vicinity of the restaurant group is a concept deserving of further study.

* Geographically, this will entail a combination of infill development, review of potential commercial/ manufacturing activity along the 405 corridor, and reuse of aging or marginal commercial centers.

At the request of city officials, Urban Research Associates also examined selected neighborhood shopping centers and strip commercial clusters for particular concerns and potentials reuse. Based on a field reconnaissance, a few of those centers could be placed in one of two categories as listed below:

Candidates for Potential Recycling/Adaptive Reuse:

Harbor & Lilac (SW corner)
vacant Builders' Square portion
longstanding major vacancy
Magnolia & Edinger (SE corner)
poor access, limited parking
16034 - 16040 Newhope (strip center)
high vacancy, deferred maintenance
Magnolia & Talbert (SE corner)
major vacancy, deferred maintenance
Talbert & Bushard (SW corner)
limited parking, major vacancy

Candidates for Renovation:

Magnolia Center (SE cor Magnolia & Warner)
anchor for vacant En Bun Market
Village Center (NE cor Talbert & Magnolia)
landscaping & oversized parking area
Magnolia & Edinger (SE corner)
small scale; parking appearance
Golden Triangle Center (Edinger & Lilac)
Magnolia & Garfield (NW corner)

To deal with these special cases, the city could initiate:

* Commercial rehabilitation loan/grant program

* Creation of a Commercial Centers Redevelopment Project Area (non-contiguous parcels)

* Rezoning in the most extreme situations

As part of local government's long-range planning for such commercial sites, the city may wish to periodically monitor their conditions along with consideration of a survey of the plans and desires of business owner/operators.

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Noise Element of the General Plan

for the

City of Fountain Valley

Prepared by

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Report # 92-45
May 1, 1992

CITY OF FOUNTAIN VALLEY NOISE ELEMENT

1.0 INTRODUCTION

1.1 OVERVIEW

1.1.1 Contents of Element

This Noise Element follows the recently revised State guidelines in the State Government code Section 653021(g) and Section 46050.1 of the Health and Safety Code. The Noise Element quantifies the community noise environment in terms of noise exposure contours for both near-term and long-term levels of growth and traffic activity. The information will become a guideline for the development of land use policies to achieve compatible land uses and provide baseline levels and noise source identification for local noise ordinance enforcement.

1.1.2 Key Issues

1. Transportation Noise Control -Within the City of Fountain Valley are a number of transportation related noise sources including one major highway, major arterials and collector roadways. These sources are the major contributors of noise in Fountain Valley. Cost effective strategies to reduce their influence on the community noise environment are an essential part of the Noise Element.

2. Community Noise Control for Non-Transportation Noise Sources - Residential land uses and areas identified as noise sensitive must be protected from excessive noise from non-transportation sources including commercial and construction activities. These impacts are most effectively controlled through the adoption and application of a City Noise Ordinance.

3. Noise and Land Use Planning Integration - Information relative to the existing and future noise environment within City of Fountain Valley should be integrated into future land use planning decisions. The Element presents the noise environment in order that the City may include noise impact considerations in development programs. Noise and land use compatibility guidelines are presented, as well as noise standards for new developments.

1.2 PURPOSE

The Noise Element of a General Plan is a comprehensive program for including noise control in the planning process. It is a tool for local planners to use in achieving and maintaining compatible land use with environmental noise levels. The Noise Element identifies noise sensitive land uses and noise sources, and defines areas of noise impact for the purpose of developing programs to ensure that City of Fountain Valley residents will be protected from excessive noise intrusion.

1.3 AUTHORIZATION

The State of California has mandated that each county and city prepare a Noise Element as part of its General Plan. Section 65302(g) of the California Government Code requires specifically:

> *"(g) A Noise Element shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:*
>
> *Highways and freeways.*
>
> *Primary arterials and major local streets.*
>
> *Passenger and freight on-line railroad operations and ground rapid transit systems.*
>
> *Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.*
>
> *Local industrial plants, including, but not limited to, railroad classification yards.*
>
> *Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.*
>
> *Noise contours shall be shown for all of the sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (LDN). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified in paragraphs (1) to (6), inclusive. The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The Noise Element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards."*

The State Guidelines for Preparation and Content of Noise Elements of the General Plan indicate that the Noise Element should present the noise environment in terms of noise contours. For those areas identified as containing noise sensitive facilities, the noise environment is determined by monitoring.

2.0 EXISTING CONDITIONS/ISSUE ANALYSIS

2.1 DEFINITION OF NOISE

1. Noise Definitions Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are shown in Exhibit 1.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

HEARING LOSS is not a concern in community noise problems of this type. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, are not sufficiently loud to cause hearing loss.

SPEECH INTERFERENCE is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA, and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level. Exhibit 2 shows the relationship between noise levels and speech interference.

SLEEP INTERFERENCE is a major noise concern because sleep is the most noise sensitive human activity. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people which are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm.

SOUND LEVELS AND LOUDNESS OF ILLUSTRATIVE NOISES IN INDOOR AND OUTDOOR ENVIRONMENTS

(A-Scale Weighted Sound Levels)

dB(A)	OVER-ALL LEVEL Sound Pressure Level Approx. 0.0002 Microbar	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different Sound Levels
130	UNCOMFORTABLY	Military Jet Aircraft Take-Off With After-burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
120 110	LOUD	Turbo-Fan Aircraft @ Take Off Power @ 200 Ft. (90)	Riveting Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100	VERY	Jet Flyover @ 1000 Ft. (103) Boeing 707, DC-8 @ 6080 Ft. Before Landing (106) Bell J-2A Helicopter @ 100 Ft. (100)		100 dB(A) 8 Times as Loud
90	LOUD	Power Mower (96) Boeing 737, DC-9 @ 6080 Ft. Before Landing (97) Motorcycle @25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Prop. Airplane Flyover @ 1000 Ft. (88) Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement Edge, 10:00 AM (76 +or- 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud
40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
	JUST AUDIBLE	(dB(A) Scale Interrupted)		
10	THRESHOLD OF HEARING			

SOURCE: Reproduced from Melville C. Branch and R. Dale Beland, Outdoor Noise in the Metropolitan Environment, Published by the City of Los Angeles, 1970, p.2.

Exhibit 1

Typical A-Weighted Sound Levels

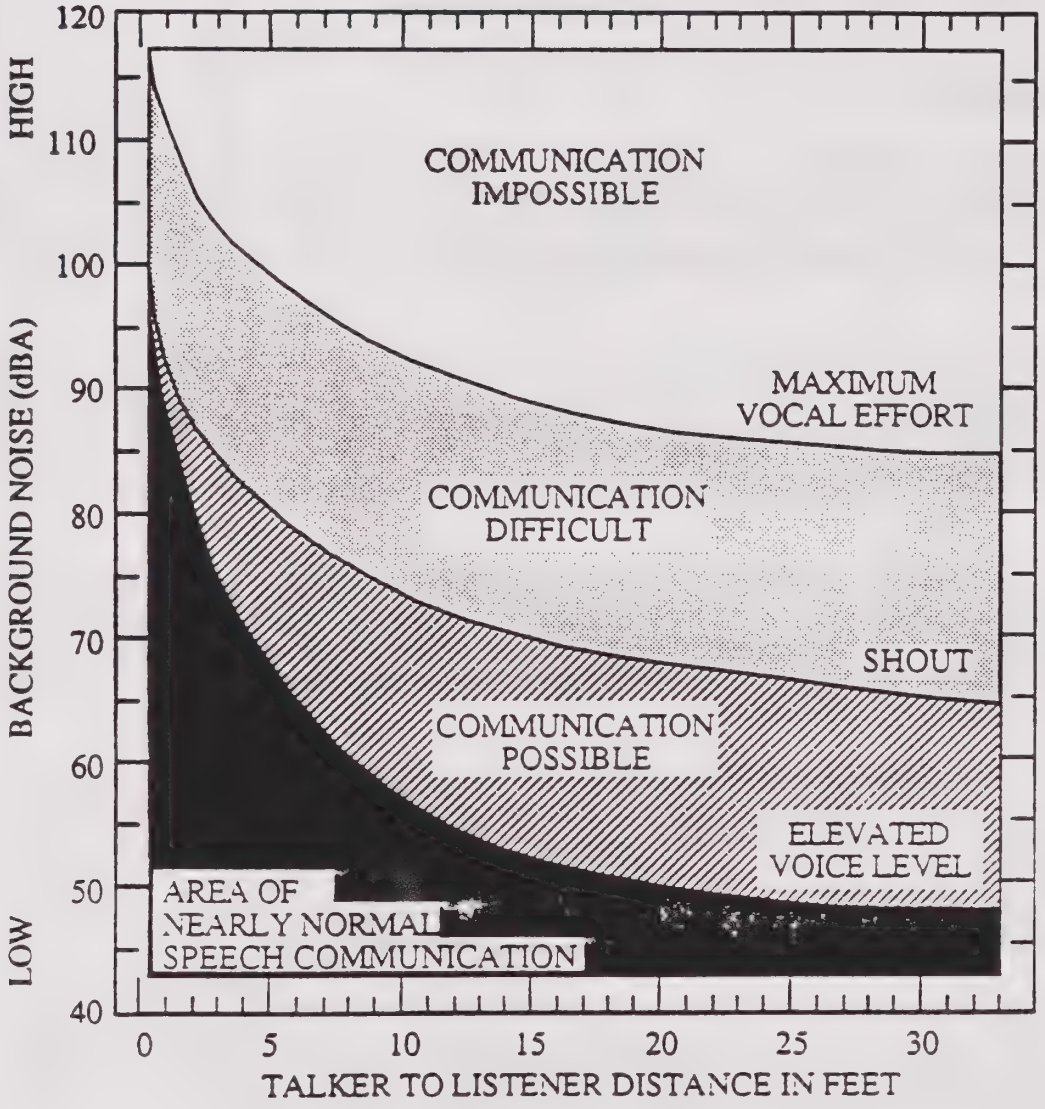


Exhibit 2

Effects of Noise on Speech Interference

ANNOYANCE is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

2.2.1 Standards

Community noise is generally not steady state and varies with time. Under conditions of fluctuating noise levels, some type of statistical metric is necessary in order to quantify noise exposure over a long period of time. Several rating scales have been developed for describing the effects of noise on people. They are designed to account for the above known effects of noise on people.

Based on these effects, the observation has been made that the potential for noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. These scales are the Equivalent Noise Level (LEQ), the Day Night Noise Level (LDN), and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

LEQ is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the "energy" average noise level during the time period of the sample. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24 hours.

LDN is a 24-hour, time-weighted annual average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events that take place during the night (10 pm to 7 am) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where sleep is the most probable activity.

CNEL is similar to the LDN scale except that it includes an additional 5 dB penalty for events that occur during the evening (7pm to 10pm) time period. Either LDN or CNEL may be used to identify community noise impacts within the Noise Element. Examples of CNEL noise levels are presented in Exhibit 3.

The public reaction to different noise levels varies from community to community. Extensive research has been conducted on human responses to exposure of different levels of noise. Exhibit 4 relates LDN noise levels (approximately equal to CNEL noise levels) to community response from some of these surveys. Community noise standards are derived from tradeoffs between community response surveys, such as this, and economic considerations for achieving these levels.

Intermittent or occasional noise such as those associated with stationary noise sources is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the LDN scale. To account for intermittent noise, another method to characterize noise is the Percent Noise Level (L%). The Percent Noise Level is the level exceeded X% of the time during the measurement period. Examples of various noise environments in terms of the Percent Noise Levels are shown in Exhibit 5.

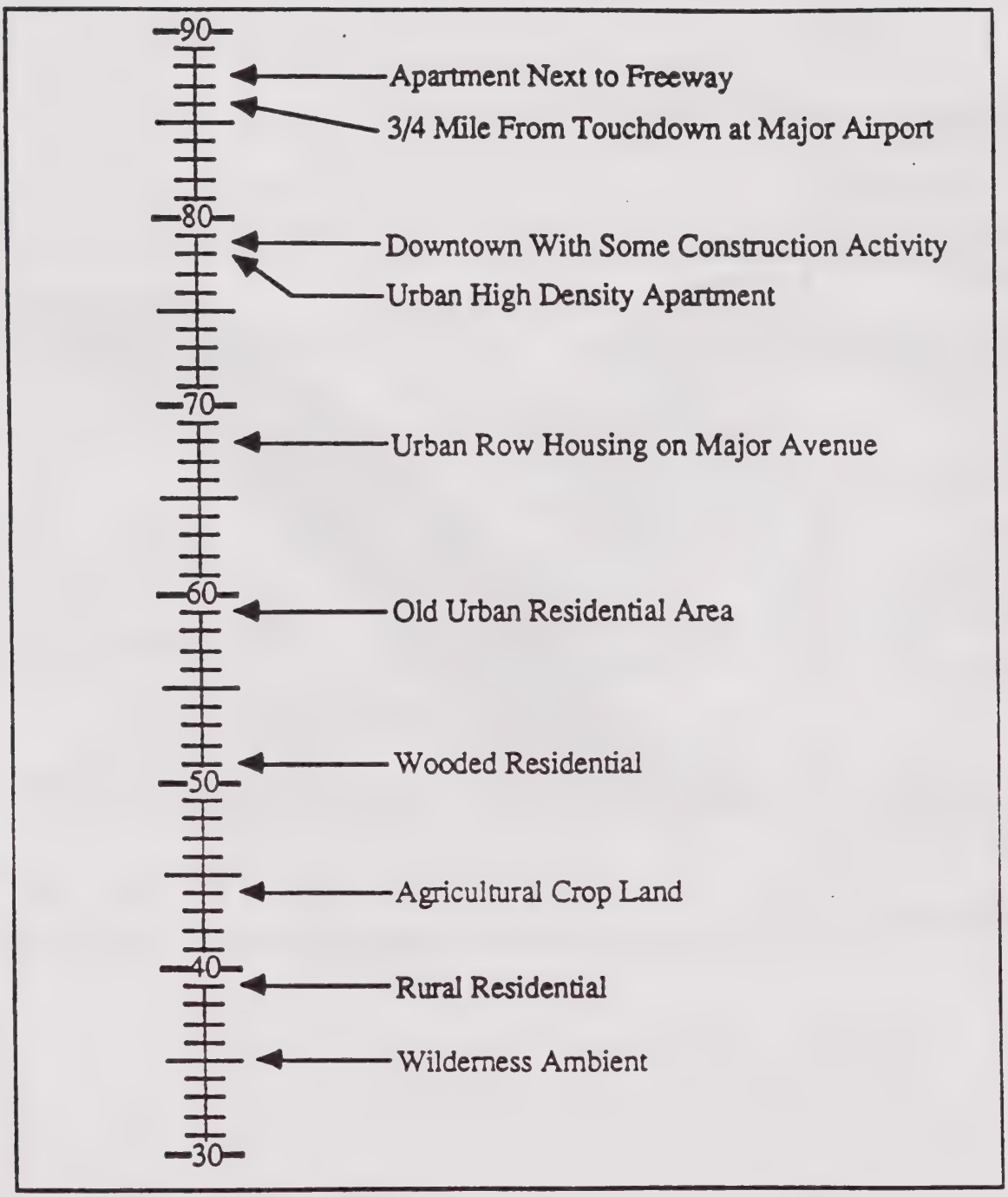


Exhibit 3
Typical Outdoor Noise Levels

COMMUNITY REACTION

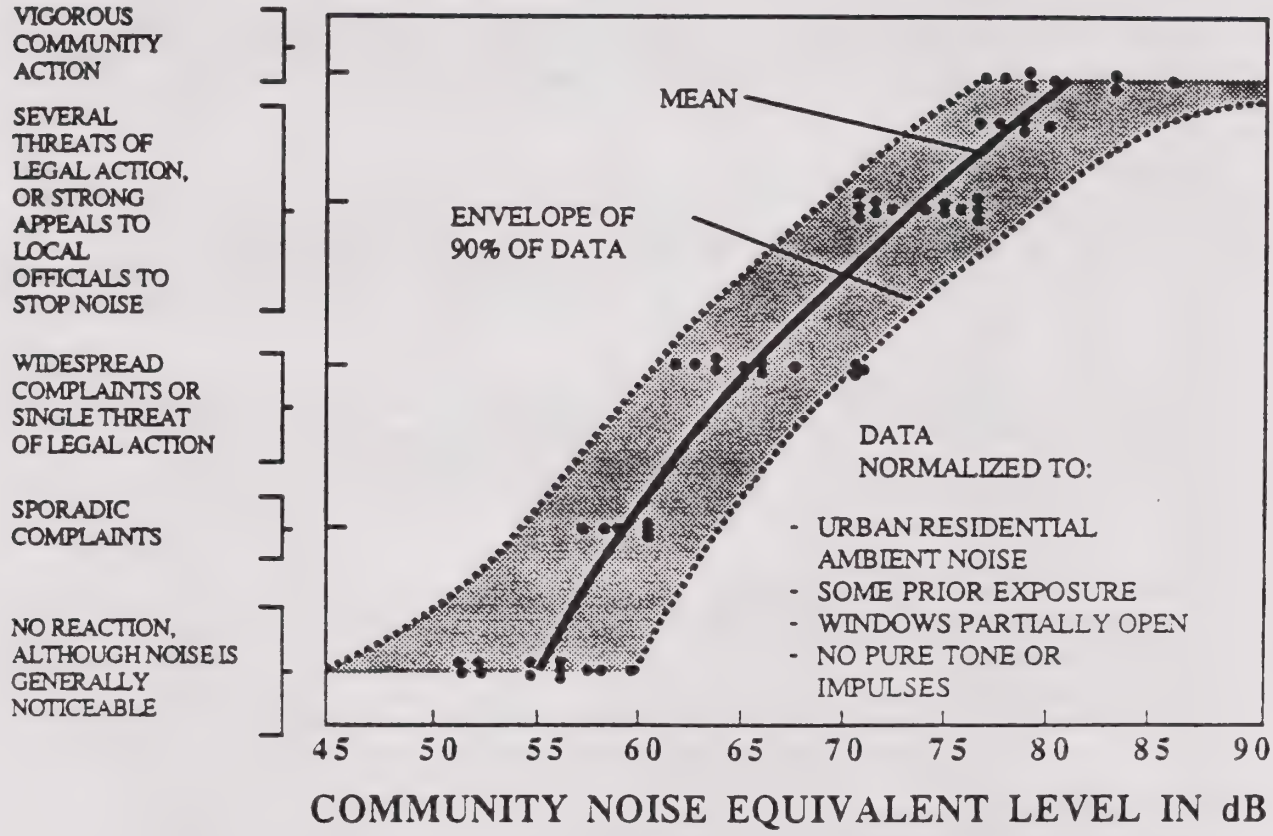
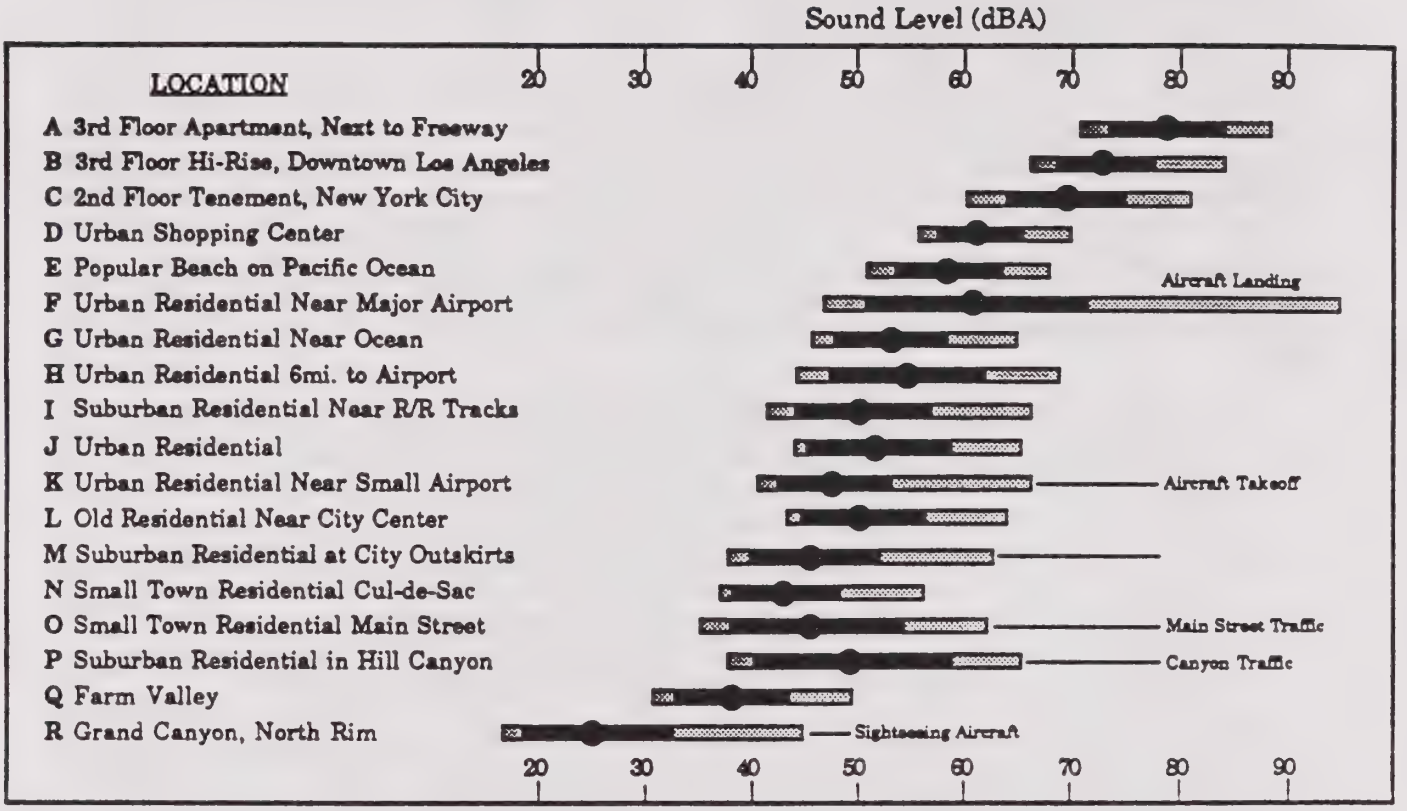


Exhibit 4
Community Reaction Surveys



SOURCE: Community Noise, EPA, 1971

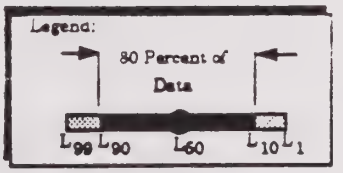


Exhibit 5
Daytime Outdoor Noise Levels

Noise Ordinances are typically specified in terms of the percent noise levels. Ordinances are designed to protect people from non-transportation related noise sources such as music, machinery and vehicular traffic on private property. Noise Ordinances do not apply to motor vehicle noise on public streets or other transportation related noise sources that are preempted by the State or Federal government.

Noise/Land Use Compatibility Guidelines The purpose of this section is to present information regarding the compatibility of various land uses with environmental noise. It is from these guidelines and standards, that the City of Fountain Valley Noise Criteria and Standards have been developed. Noise/Land use guidelines have been produced by a number of Federal and State agencies including the Federal Highway Administration, the Environmental Protection Agency, the Department of Housing and Urban Development, the American National Standards Institute, and the State of California. These guidelines, presented in the following paragraphs, are all based upon cumulative noise criteria such as LEQ, LDN or CNEL.

The ENVIRONMENTAL PROTECTION AGENCY published in March 1974 a very important document entitled "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety" (EPA 550/9-74-004). Exhibit 6 presents a table of land uses and requisite noise levels. In this table, 55 LDN is described as the requisite level with an adequate margin of safety for areas with outdoor uses, this includes residences, and recreational areas. The EPA "levels document" does not constitute a standard, specification, or regulation, but identifies safe levels of environmental noise exposure without consideration for economic cost for achieving these levels.

The FEDERAL HIGHWAY ADMINISTRATION (FHWA) has adopted and published noise abatement criteria for highway construction projects. The noise abatement criteria specified by the FHWA are presented in Exhibit 7 in terms of the maximum one hour Noise Equivalent Level (LEQ). The FHWA noise abatement criteria basically establishes an exterior noise goal for residential land uses of 67 LEQ and an interior goal for residences of 52 LEQ. The noise abatement criteria applies to private yard areas and assumes that typical wood frame homes with windows open provide 10 dB noise reduction (outdoor to indoor) and 20 dB noise reduction with windows closed.

The STATE OF CALIFORNIA requires each City and County to adopt Noise Elements of their General Plans. Such Noise Elements must contain a Noise/Land Use compatibility matrix. A recommended (but not mandatory) matrix is presented in the "Guidelines for the Preparation and Content of Noise Elements of the General Plan," (Office of Noise Control, California Department of Health, February 1976). Exhibit 8 presents this recommended matrix.

The CITY OF FOUNTAIN VALLEY 1974 NOISE ELEMENT OF THE GENERAL PLAN contains specific guidelines for land use compatibility with community noise environments. These guidelines indicate acceptable and unacceptable noise levels for specific land uses. The County of Orange Noise/Land Use Compatibility Manual also includes exterior and interior noise standards adopted June 11, 1985. The City of Fountain Valley requires that residential outdoor areas not exceed 60 CNEL.

	Measure	Indoor Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)	Outdoor Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)
Residential with Outside Space and Farm Residences	Ldn	45		45	55		55
	Leq(24)		70			70	
Residential with No Outside Space	Ldn	45		45			
	Leq(24)		70				
Commercial	Leq(24)	(a)	70	70(c)	(a)	70	70(c)
Inside Transportation	Leq(24)	(a)	70	(a)			
Industrial	Leq(24)(d)	(a)	70	70(c)	(a)	70	70(c)
Hospitals	Ldn	45		45	55		55
	Leq(24)		70			70	
Educational	Ldn	45		45	55		55
	Leq(24)		70			70	
Recreational Areas	Leq(24)	(a)	70	70(c)	(a)	70	70(c)
Farm Land and General Unpopulated Land	Leq(24)				(a)	70	70(c)

Code:

a. Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity.
b. Based on lowest level.
c. Based only on hearing loss.
d. An Leq(8) of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours p day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an Leq of (dB.

Note: Explanation of identified level for hearing loss: The exposure period which results in hearing loss at the identified level is a period of 40 years.

* Refers to energy rather than arithmetic averages.

SOURCE : EPA

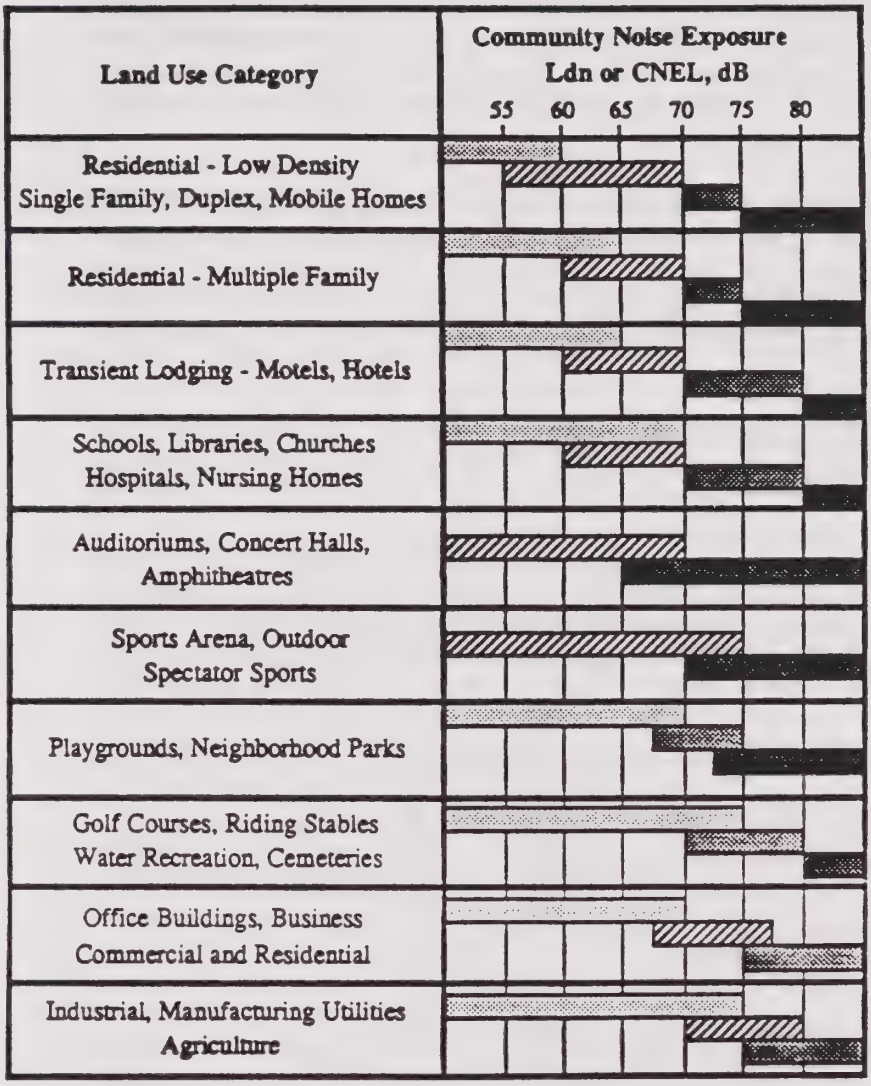
Exhibit 6

Environmental Protection Agency Guideline

ACTIVITY CATEGORY	DESIGN NOISE LEVEL - LEQ	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (Exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of open spaces, or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas and parks which are not included in category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Category A or B above.
D	-	For requirements of undeveloped lands see FHWA PPM 773.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Exhibit 7

FHWA Noise Abatement Criteria



Interpretation

Normally Acceptable

Specified Land Use is Satisfactory, Based Upon the Assumption that Any Buildings Involved are of Normal Conventional Construction, Without Any Special Noise Insulation Requirements.

Conditionally Acceptable

New Construction or Development Should be Undertaken Only After a Detailed Analysis of the Noise Reduction Requirement is Made and Needed Noise Insulation Features Included in the Design. Conventional Construction, but with Closed Windows and Fresh Air Supply Systems or Air Conditioning, Will Normally Suffice.

Normally Unacceptable

New Construction or Development Should Generally be Discouraged. If New Construction or Development Does Proceed, a Detailed Analysis of the Noise Reduction Requirements Must be Made and Needed Noise Insulation Features Included in the Design.

Clearly Unacceptable

New Construction or Development Should Generally not be Undertaken.

Exhibit 8

California Land Use/Noise Guidelines

2.2.2 Methods of Measurement

The noise environment in Fountain Valley was assessed using a comprehensive noise measurement survey of existing noise sources and incorporating these results into computer noise models (it is, of course, impossible to measure future noise levels so we must rely on computer noise models for future noise estimates.) The noise environment is commonly presented graphically in terms of lines of equal noise levels, or contours. The following paragraphs detail the methodology used in the above.

Measurement Procedure. Sensitive receptor sites were selected for measurement of the existing noise environment in Fountain Valley. A review of noise complaints and identification of major noise sources in the community provided the initial base for development of the community noise survey. The measurement locations were selected on the basis of proximity to major noise sources and noise sensitivity of the land use. The twelve measurement locations are depicted in Exhibit 9.

The Fountain Valley Noise Element measurement survey utilized the Brüel & Kjær 2231 automated digital noise data acquisition system for short-term (10 min.) LEQ readings. This instrument automatically calculates both the Equivalent Noise Level (LEQ) and Percent Noise Level (L%) for any specific time period. The noise monitor was equipped with a Brüel & Kjær 1/2 inch electret microphone and was calibrated with a Brüel & Kjær calibrator with calibrations traceable to the National Bureau of Standards. Calibration for the calibrators are certified through the duration of the measurements by Brüel & Kjær. This measurement system satisfies the ANSI (American National Standards Institute) Standards 1.4 for Type 1 precision noise measurement instrumentation.

Based upon the identification of the major noise sources and the location of sensitive receptors, a noise measurement survey was conducted. The function of the survey is threefold. The first is to determine the existing noise levels at noise sensitive land uses. The second function is to provide empirical data for the correlation and calibration of the computer noise modeled environment. A third important aspect of the survey is to obtain an accurate description of the ambient noise levels in various communities throughout the City. Ambient traffic noise measurements at each site were designed to provide a "snapshot" indication of the traffic noise at the measurement site. (The noise contours based on the CNEL noise scale are perhaps a better indicator of the traffic noise at a given location.) The ambient traffic noise measurements were also used to provide an indication as to the validity of the FHWA traffic noise model used for the CNEL noise projections.

Noise contours for all the major noise sources in Fountain Valley were developed based upon existing traffic conditions. These contours were determined from the traffic levels for these sources. The contours are expressed in terms of the Community Noise Equivalent Level (CNEL.) The existing conditions scenario is derived from the existing traffic data as provided in the Fountain Valley General Plan Traffic Analysis dated April 2, 1992.

2.3 EXISTING ACOUSTIC ENVIRONMENT

This section contains a detailed description of the current noise environment within the City. This description of the noise environment includes an identification of noise sources and noise sensitive land uses, a community noise measurement survey, and noise contour maps.

To define the noise exposure, this section of the report first identifies the major sources of noise in the community. The major noise sources in the City are from roadway traffic noise. The major traffic noise source in the City is Interstate 405 which runs through the City from

southeast to northwest. In addition, the City contains a large number of major arterials spread uniformly throughout the City. As mandated by the State, noise sensitive receptors include, but are not limited to, residential areas containing schools, hospitals, rest homes, long-term medical or mental care facilities, or any other land use areas deemed noise sensitive by the local jurisdiction.

2.3.1 Noise Sources and Levels

The predominant land use in the City is residential, and should also be considered the most noise sensitive. Other noise sensitive land uses include elementary schools, junior high schools, parks, a hospital and churches.

The City of Fountain Valley is almost fully developed, but it is still heavily used by vehicular traffic by all of the surrounding cities because of the I-405 that traverses through the City. This traffic use will result in increased traffic noise levels throughout the City. Maintenance of a moderately quiet ambience is important to maintaining the overall atmosphere of the area. The ambient noise levels for the City are lower in areas not adjacent to the I-405. Motor vehicle noise will continue to be significant even if each individual vehicle eventually meets state noise standards.

The majority of noise in Fountain Valley originates from motor vehicles. The I-405 is the major roadway noise source for the City. Other primary roadway noise sources include Brookhurst Street, Harbor Boulevard, Warner Avenue, Slater Avenue, Talbert Avenue and Euclid Street. Other arterials which were included in the traffic analysis for the City include Ellis Avenue, Garfield Avenue, Heil Avenue, Edinger Avenue, Magnolia Street, Bushard Street, Ward Street and Newhope Street. Other roadways in the City do not have sufficient traffic volumes to generate significant noise impacts, or were not included in the traffic analysis for the City.

The noise environment for Fountain Valley can be described using noise contours developed for the major noise sources within the City. The major noise source impacting the City is traffic noise. Existing and future noise contour maps have been developed for the City as part of this element.

The traffic noise contours for existing conditions are presented in Exhibit 10. (This map is available for review at the City at 1" = 500' scale.) The 70 CNEL, 65 CNEL and 60 CNEL contours are shown on the map. The noise contours are also presented in tabular format in Table 3. These traffic noise levels were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the LEQ noise level. A computer code has been written which computes equivalent noise levels for each of the time periods used in CNEL. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. The traffic volumes used to project these noise levels were obtained from the "Fountain Valley General Plan Traffic Analysis", April 2, 1992 by Austin Foust Associates, Inc.. Table 1 indicates truck mix data for Interstate 405 obtained obtained from the "1988 Annual Average Daily Truck Traffic on the California State Highway System" prepared by the U.S. Department of Transportation in August of 1989. Truck mixes for all other arterials are shown in Table 2.

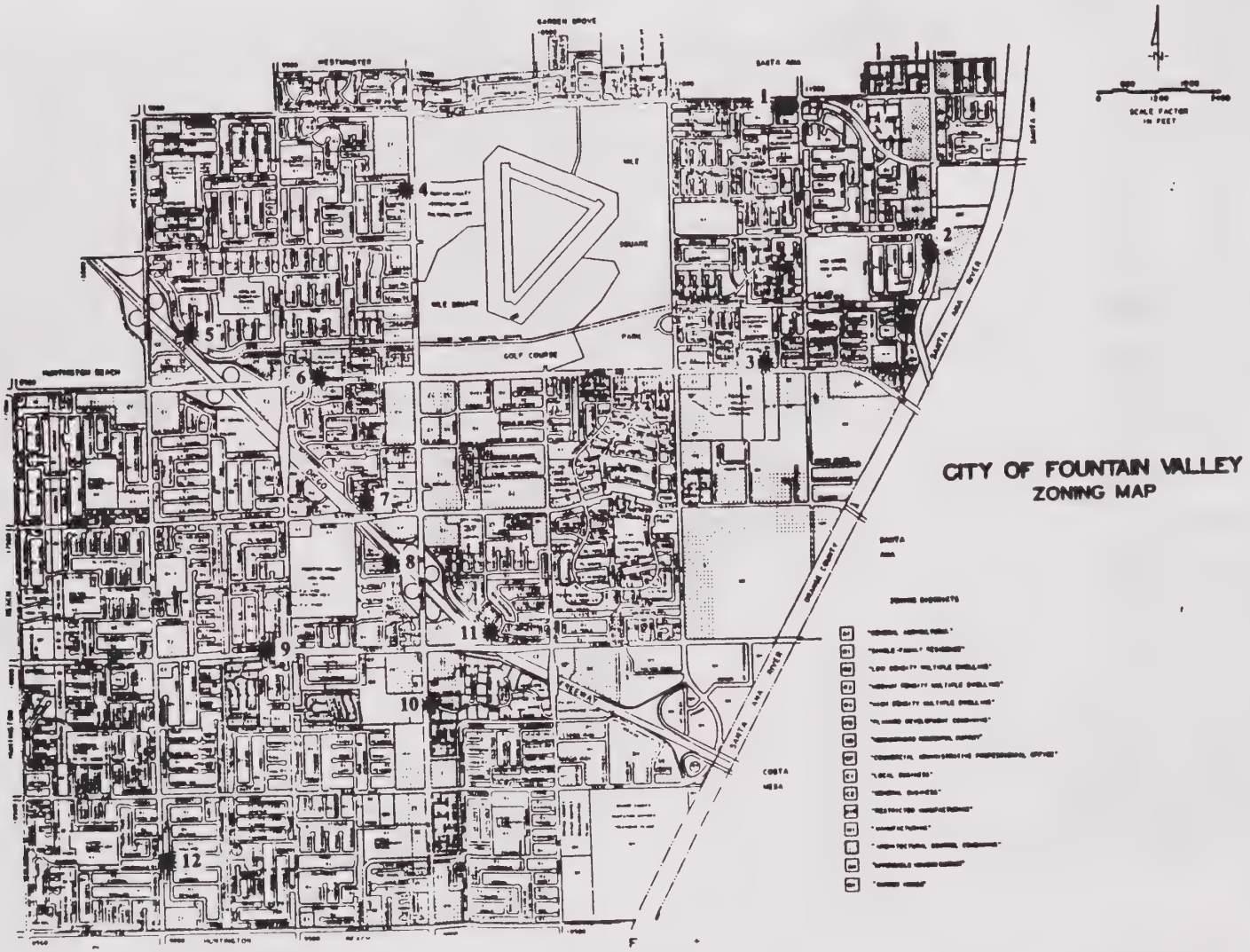


Exhibit 9
Noise Measurement Locations

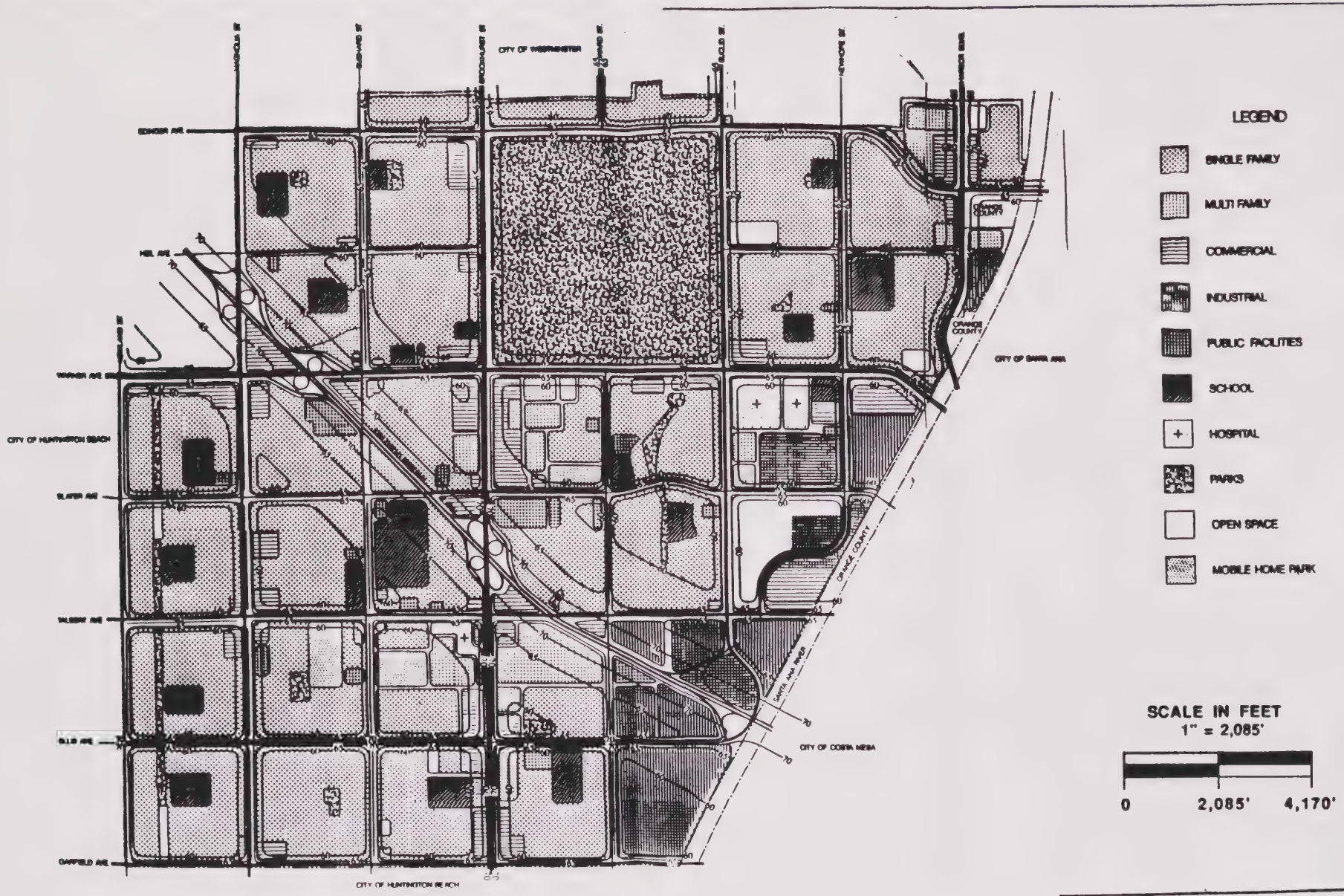


Exhibit 10

Existing CNEL Noise Contours

MESTRE GREVE ASSOCIATES

Table 1
TRUCK MIX DATA FOR MAJOR NOISE SOURCES

ROADWAY	% Medium Trucks	% Heavy Trucks
I-405	4.3	2.8

The traffic distribution used in the arterial roadway CNEL calculations are presented below in Table 2. These traffic distribution estimates are based upon traffic surveys, and are considered typical for residential roadways in California.

Table 2
TRAFFIC DISTRIBUTION PER TIME OF DAY
IN PERCENT OF ADT FOR ARTERIALS

	PERCENT OF ADT		
VEHICLE TYPE	DAY	EVENING	NIGHT
Automobile	75.51	12.57	9.34
Medium Truck	1.56	0.09	0.19
Heavy Truck	0.64	0.02	0.08

Existing noise contours for the City were generated using the above input data with the FHWA computer noise model. The results are shown in Table 3 and Exhibit 10 and do not account for barrier effects due to intervening topography such as berms or existing noise barriers along the roadways.

Table 3
EXISTING TRAFFIC NOISE CONTOURS

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet) 70 CNEL	65 CNEL	60 CNEL
I-405	North of Magnolia	248.0	55	426	918	1,979
	Magnolia to Brookhurst	247.0	55	425	916	1,973
	Brookhurst to Euclid	263.0	55	443	955	2,058
	South of Euclid	286.0	55	469	1,010	2,176
Edinger	Magnolia to Bushard	18.0	45	RW	99	214
	Bushard to Brookhurst	19.0	45	RW	103	222
	Brookhurst to Ward	22.0	45	53	114	245
	Ward to Euclid	21.0	45	51	110	237
	Euclid to Newhope	18.0	45	RW	99	214
	Newhope to Harbor	18.0	45	RW	99	214
	East of Harbor	19.0	45	RW	103	222
Heil	Magnolia to Bushard	6.0	40	RW	RW	85
	Bushard to Brookhurst	5.0	40	RW	RW	75
	Euclid to Newhope	4.0	40	RW	RW	65
	Newhope to Harbor	5.0	40	RW	RW	75
Warner	Newland to Magnolia	38.0	45	76	164	352
	Magnolia to Bushard	29.0	45	63	137	294
	Bushard to Brookhurst	31.0	45	66	143	308
	Brookhurst to Ward	34.0	45	70	152	327
	Ward to Euclid	28.0	45	62	133	288
	Euclid to Newhope	31.0	45	66	143	308
	Newhope to Harbor	27.0	45	60	130	281
Slater	Newland to Magnolia	18.0	40	RW	82	176
	Magnolia to Bushard	17.0	40	RW	79	170
	Bushard to Brookhurst	20.0	40	RW	88	189
	Brookhurst to Ward	25.0	40	RW	102	220
	Ward to Euclid	17.0	40	RW	79	170
	Euclid to Newhope	17.0	40	RW	79	170
	Newhope to Harbor	20.0	40	RW	88	189
Talbert	Newland to Magnolia	17.0	45	RW	96	206
	Magnolia to Bushard	22.0	45	53	114	245
	Bushard to Brookhurst	28.0	45	62	133	288
	Brookhurst to Ward	26.0	45	59	127	274
	Ward to Euclid	20.0	45	RW	107	230
	Euclid to Newhope	27.0	45	60	130	281

RW - contour falls on roadway right-of-way
ADT - Average Daily Traffic.
* Represents speed used with FHWA noise model and not necessarily posted speed limit.

Table 3 (Continued)
EXISTING TRAFFIC NOISE CONTOURS

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet) 70 CNEL	65 CNEL	60 CNEL
Ellis	Newland to Magnolia	17.0	40	RW	79	170
	Magnolia to Bushard	18.0	40	RW	82	176
	Bushard to Brookhurst	21.0	40	RW	91	196
	Brookhurst to Ward	22.0	40	RW	94	202
	Ward to Euclid	28.0	40	51	110	237
Garfield	Newland to Magnolia	15.0	45	RW	88	190
	Magnolia to Bushard	17.0	45	RW	96	206
	Bushard to Brookhurst	15.0	45	RW	88	190
	Brookhurst to Ward	9.0	45	RW	63	135
Newland	Garfield to Ellis	16.0	40	RW	76	163
	Ellis to Talbert	17.0	40	RW	79	170
	Talbert to Slater	16.0	40	RW	76	163
	Slater to Warner	17.0	40	RW	79	170
Magnolia	Garfield to Ellis	25.0	45	57	124	267
	Ellis to Talbert	28.0	45	62	133	288
	Talbert to Slater	28.0	45	62	133	288
	Slater to Warner	30.0	45	65	140	301
	Warner to Heil	28.0	45	62	133	288
	Heil to Edinger	30.0	45	65	140	301
Bushard	Garfield to Ellis	18.0	40	RW	82	176
	Ellis to Talbert	19.0	40	RW	85	183
	Talbert to Slater	16.0	40	RW	76	163
	Slater to Warner	18.0	40	RW	82	176
	Warner to Heil	18.0	40	RW	82	176
	Heil to Edinger	14.0	40	RW	69	149
Brookhurst	Garfield to Ellis	49.0	45	90	194	418
	Ellis to Talbert	50.0	45	91	196	423
	Talbert to Slater	54.0	45	96	207	446
	Slater to Warner	42.0	45	81	175	377
	Warner to Heil	41.0	45	80	172	371
	Heil to Edinger	39.0	45	77	166	359
	Edinger to MacFadden	35.0	45	72	155	334
Ward	Garfield to Ellis	15.0	45	RW	88	190
	Ellis to Talbert	10.0	40	RW	55	119
	Talbert to Slater	11.0	40	RW	59	127
	Slater to Warner	6.0	40	RW	RW	85
	Edinger to McFadden	7.0	40	RW	RW	94

RW - contour falls on roadway right-of-way
ADT - Average Daily Traffic.
* Represents speed used with FHWA noise model and not necessarily posted speed limit.

Table 3 (Continued)
EXISTING TRAFFIC NOISE CONTOURS

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet) 70 CNEL	65 CNEL	60 CNEL
Euclid	Ellis to Talbert	31.0	45	66	143	308
	Talbert to Slater	27.0	45	60	130	281
	Slater to Warner	26.0	45	59	127	274
	Warner to Heil	33.0	45	69	149	321
	Heil to Edinger	31.0	45	66	143	308
	Edinger to McFadden	28.0	45	62	133	288
Newhope	MacArthur to Slater	9.0	40	RW	52	111
	Slater to Warner	20.0	40	RW	88	189
	Warner to Heil	19.0	40	RW	85	183
	Heil to Edinger	20.0	40	RW	88	189
Harbor	Warner to Edinger	39.0	45	77	166	359
	Edinger to McFadden	39.0	45	77	166	359

RW - contour falls on roadway right-of-way
ADT - Average Daily Traffic.
* Represents speed used with FHWA noise model and not necessarily posted speed limit.

The existing noise contours in Table 3 and Exhibit 10 can be used with a Land/Use Compatibility Matrix to determine the compatibility of the existing land uses with the City's existing noise levels. Exhibit 11 presents criteria used to assess the compatibility of the existing land uses with the existing noise environment. This land/use compatibility matrix was developed based on the City's current land/use compatibility guidelines from the current Noise Element of the City General Plan and the County's exterior and interior compatibility matrix. The new land/use compatibility matrix (Exhibit 11) mainly reflects the City guidelines for residential, mobile home, hotel, motel, as well as retail commercial, theater and restaurant land uses.

The existing noise contours (Exhibit 10) show that the noise levels from I-405 constitute a major noise corridor. Commercial and industrial land/uses in the vicinity of this noise corridor have a relatively high noise tolerance. According to the compatibility matrix the commercial and industrial land uses along this noise corridor experience unmitigated noise levels greater than 70 CNEL and are considered "normally compatible"; new construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction with closed windows and fresh air supply systems or air conditioning, will normally suffice. Other industrial or commercial land uses in the City are exposed to worst case noise levels in excess of 65 CNEL which is "normally compatible" according to the compatibility matrix.

Residences currently exist along much of the I-405 and are exposed to traffic noise from this major noise corridor. The traffic noise contours in Exhibit 10 and the data in Table 3 indicate that without considering the existing sound walls, the residences along I-405 are exposed to worst case unmitigated noise levels just less than 75 CNEL. However, a comparison of calibrated modeled levels and the measured noise levels along the freeway indicate that the existing sound wall provides a noise reduction ranging from 8 dB to 16 dB depending on the

LAND USE CATEGORIES		COMMUNITY NOISE EQUIVALENT LEVEL CNEL						
CATEGORIES	USES	<55	<60	<65	<70	<75	<80	
RESIDENTIAL	Single Family, Duplex Multiple Family	A	A	B	C	C	D	D
RESIDENTIAL	Mobile Homes	A	A	B	C	D	D	D
COMMERCIAL Regional, District	Hotel, Motel, Transient Lodging	A	A	A	B	C	C	D
COMMERCIAL Regional Village District, Special	Commercial Retail, Bank Restaurant, Movie Theatre	A	A	B	B	B	C	D
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Office Building, Research and Development, Professional Offices City Office Building	A	A	B	B	B	C	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	A	B	C	C	D	D	D
COMMERCIAL Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track Equestrian Center, Sports Club	A	A	B	B	C	C	D
COMMERCIAL General, Special INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing Wholesale, Utilities	A	A	A	B	B	C	D
INSTITUTIONAL General	Hospital, Church, Library Schools' Classroom	A	B	C	C	C	C	D
OPEN SPACE	Parks	A	A	B	C	C	D	D
OPEN SPACE	Golf Course, Cemeteries, Nature Centers Wildlife Reserves, Wildlife Habitat	A	A	B	B	C	D	D
AGRICULTURE	Agriculture	A	A	A	A	A	A	B

INTERPRETATATION

ZONE A
CLEARLY COMPATIBLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

ZONE B
NORMALLY COMPATIBLE

New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, wih closed windows and fresh air supply systems or air conditioning, will normally suffice.

ZONE C
NORMALLY INCOMPATIBLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

ZONE D
CLEARLY INCOMPATIBLE

New construction or development should generally not be undertaken.

Exhibit 11

Noise/Land Use Compatibility Matrix

wall height and location along I-405. Therefore, the residences along the I-405 experience mitigated noise levels ranging from just less than 60 CNEL to just less than 70 CNEL with the existing freeway sound wall. The compatibility matrix indicates that residences experiencing noise levels less than 60 CNEL are considered "clearly compatible." The land/use compatibility matrix defines "clearly compatible" as "Specified land use is satisfactory based upon the assumption that buildings involved are of normal conventional construction without any special noise insulation requirements." According to the compatibility matrix residential land uses experiencing noise levels between 60 and 65 CNEL are considered "normally compatible" as defined earlier. Those existing residences experiencing mitigated traffic noise levels just less than 70 CNEL are considered "normally incompatible"; New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Existing residences experience traffic noise from all of the major arterials which traverse the City. The traffic noise contours shown in Exhibit 10 indicate that the existing residences along Garfield Avenue, Ellis Avenue, Talbert Avenue, Slater Avenue, Warner Avenue, Edinger Avenue, Magnolia Street, Bushard Street, Brookhurst Street, Ward Street, Euclid Street, Newhope Street and Harbor Boulevard experience unmitigated traffic noise levels in excess of 65 CNEL, which is considered "normally incompatible" according to the compatibility matrix. Residences located along Heil Avenue experience traffic noise levels greater than 60 CNEL which is considered "normally compatible". Existing residences which are not located directly adjacent to these roadways will experience traffic noise levels less than 60 CNEL which is considered "clearly compatible".

The existing mobile homes located along Talbert Avenue experience traffic noise levels just greater than 65 CNEL. According to the compatibility matrix in Exhibit 11 mobile home land uses experiencing noise levels in just greater than 65 CNEL are considered "normally incompatible". The existing mobile homes located along Bushard Street experience traffic noise levels just less than 65 CNEL which is considered "normally compatible".

Hospital land uses located at the corner of Warner Avenue and Euclid Street, and at the corner of Talbert Avenue and Brookhurst Street experience worst case traffic noise levels greater than 65 CNEL. The compatibility matrix indicates that hospital land uses experience traffic noise levels greater than 65 CNEL and are considered "normally incompatible".

Existing school land uses throughout the City are generally located away from I-405, except for Fountain Valley Highschool and the McDowell Elementary School. This highschool and elementary school experience worst case traffic noise levels in excess of 70 CNEL, which is considered "normally incompatible." Existing schools located along Newhope Street, between Slater Avenue and Edinger Avenue, and along Slater Avenue, Bushard Street and Ellis Avenue generally experience worst case traffic noise levels ranging between 60 and 65 CNEL. The compatibility matrix indicates that school land uses exposed to noise levels in excess of 60 CNEL are considered "normally incompatible." All other school land uses in the City are set back from roadways and experience traffic noise levels less than 60 CNEL, which is considered "clearly acceptable."

The parks in the City generally experience traffic noise levels ranging from less than 60 CNEL to 65 CNEL, except for Mile Square Park and along I-405. Mile Square Park experiences worst case traffic noise levels in excess of 65 CNEL which is considered "normally incompatible." However, most of the area within Mile Square Park is located outside the 60 CNEL and is considered "clearly compatible" according to the compatibility matrix. Los Alamos Park, which is adjacent to the I-405, experiences traffic noise levels in excess of 70

CNEL and is considered "normally incompatible." Most other parks throughout the City experience worst case traffic noise levels between 60 and 65 CNEL and are considered "normally compatible" as indicated in the compatibility matrix. Those parks which are set back from major roadways in the City experience traffic noise levels less than 60 CNEL and are considered "clearly compatible."

Most of the existing churches throughout the City are located along major arterials and experience worst case traffic noise levels greater than 65 CNEL which is considered "normally incompatible." Exhibit 10 indicates that two existing church sites are located adjacent to I-405 and experience unmitigated traffic noise levels in excess of 70 CNEL, which is considered "normally incompatible."

It appears that 60 CNEL is a reasonable noise standard for future outdoor living areas for two main reasons. The first is that the City is almost fully developed and traffic noise along most of the roadways is not expected to increase significantly. Secondly, this 60 CNEL standard is consistent with the existing compatibility guidelines for the City and would help maintain the overall moderately quiet ambient noise level for the City. A reasonable indoor noise standard is 45 CNEL which is consistent with the State indoor residential standards. Therefore these standards are consistent with current guidelines for the City of Fountain Valley and are a reasonable long term goals for existing residential areas considering the limited amount of future development proposed for the City.

2.3.3 Noise Sensitive Land Uses

The most noise sensitive land use in Fountain Valley is residential development. It is considered especially noise sensitive because (1) considerable time is spent by individuals at home, (2) significant activities occur outdoors, and (3) sleep disturbance is most likely to occur in a residential area. Additionally, the City of Fountain Valley has a number of public educational facilities, hospitals and parks that are considered noise sensitive. These facilities are generally spread evenly throughout the City.

Noise contours represent lines of equal noise exposure, just as the contour lines on a topographic map are lines of equal elevation. The contour lines shown in Exhibit 10 are the 60, 65 and 70 CNEL traffic noise contours. The noise contours along with Exhibit 11 should be used as a guide for land use planning.The 55 CNEL contour defines the Noise Referral Zone. This is the noise level for which noise considerations should be included when making land use policy decisions. The 60 CNEL contour describes the areas for which new noise sensitive developments will be permitted only if appropriate mitigation measures are included such that the standards contained in the Noise Element are achieved.

2.4 FUTURE ACOUSTIC ENVIRONMENT

2.4.1 Noise Sources and Levels

Future traffic noise levels were computed using the FHWA Highway Traffic Noise Prediction Model with projected traffic volumes from the Fountain Valley General Plan Traffic Analysis by Austin Foust Associates, April 2, 1992. Table 4-A shows the future buildout traffic noise contour data along the I-405 and the City's major arterials that are projected for future buildout of the proposed general plan, without the extension of Newhope Street from Talbert to Euclid. For future buildout conditions with the Newhope extension noise contour distances are shown in Table 4-B, but only for those roadway segments where traffic noise will be significantly different from the "without Newhope extension" scenario.

Table 4-A
FUTURE TRAFFIC NOISE CONTOURS
(Without the Newhope Extension from Talbert Avenue to Euclid Street)

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet) 70 CNEL	65 CNEL	60 CNEL
I-405	North of Magnolia	323.0	55	508	1,095	2,360
	Magnolia to Brookhurst	317.0	55	502	1,082	2,330
	Brookhurst to Euclid	335.0	55	521	1,122	2,418
	South of Euclid	360.0	55	546	1,177	2,537
Edinger	Magnolia to Bushard	23.0	45	54	117	252
	Bushard to Brookhurst	25.0	45	57	124	267
	Brookhurst to Ward	31.0	45	66	143	308
	Ward to Euclid	30.0	45	65	140	301
	Euclid to Newhope	28.0	45	62	133	288
	Newhope to Harbor	27.0	45	60	130	281
	East of Harbor	27.0	45	60	130	281
Heil	Magnolia to Bushard	16.0	40	RW	76	163
	Bushard to Brookhurst	12.0	40	RW	62	135
	Euclid to Newhope	7.0	40	RW	RW	94
	Newhope to Harbor	10.0	40	RW	55	119
Warner	Newland to Magnolia	41.0	45	80	172	371
	Magnolia to I-405	33.0	45	69	149	321
	I-405 to Bushard	51.0	45	92	199	429
	Bushard to Brookhurst	43.0	45	82	178	383
	Brookhurst to Ward	51.0	45	92	199	429
	Ward to Euclid	43.0	45	82	178	383
	Euclid to Newhope	45.0	45	85	183	395
	Newhope to Harbor	38.0	45	76	164	352
Slater	Newland to Magnolia	20.0	40	RW	88	189
	Magnolia to Bushard	22.0	40	RW	94	202
	Bushard to Brookhurst	25.0	40	RW	102	220
	Brookhurst to Ward	33.0	40	57	123	264
	Ward to Euclid	23.0	40	RW	96	208
	Euclid to Newhope	23.0	40	RW	96	208
	Newhope to Harbor	25.0	40	RW	102	220
Talbert	Newland to Magnolia	23.0	45	54	117	252
	Magnolia to Bushard	27.0	45	60	130	281
	Bushard to Brookhurst	33.0	45	69	149	321
	Brookhurst to I-405	35.0	45	72	155	334
	I-405 to Ward	24.0	45	56	120	259
	Ward to Euclid	29.0	45	63	137	294
	Euclid to Newhope	42.0	45	81	175	377
	Newhope to Harbor	41.0	45	80	172	371

RW - contour falls on roadway right-of-way
ADT - Average Daily Traffic.
* Represents speed used with FHWA noise model and not necessarily posted speed limit.

Table 4-A (Continued)
FUTURE TRAFFIC NOISE CONTOURS
(Without the Newhope Extension from Talbert Avenue to Euclid Street)

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet) 70 CNEL	65 CNEL	60 CNEL
Ellis	Newland to Magnolia	22.0	40	RW	94	202
	Magnolia to Bushard	23.0	40	RW	96	208
	Bushard to Brookhurst	27.0	40	RW	107	231
	Brookhurst to Ward	26.0	40	RW	105	225
	Ward to Euclid	31.0	40	55	118	254
Garfield	Newland to Magnolia	22.0	45	53	114	245
	Magnolia to Bushard	24.0	45	56	120	259
	Bushard to Brookhurst	22.0	45	53	114	245
	Brookhurst to Ward	19.0	45	RW	103	222
	East of Ward	12.0	45	RW	76	163
Newland	Garfield to Ellis	20.0	40	RW	88	189
	Ellis to Talbert	20.0	40	RW	88	189
	Talbert to Slater	19.0	40	RW	85	183
	Slater to Warner	20.0	40	RW	88	189
Magnolia	Garfield to Ellis	28.0	45	62	133	288
	Ellis to Talbert	30.0	45	65	140	301
	Talbert to Slater	32.0	45	68	146	314
	Slater to Warner	31.0	45	66	143	308
	Warner to I-405	31.0	45	66	143	308
	I-405 to Heil	33.0	45	69	149	321
	Heil to Edinger	32.0	45	68	146	314
Bushard	Garfield to Ellis	26.0	40	RW	105	225
	Ellis to Talbert	25.0	40	RW	102	220
	Talbert to Slater	24.0	40	RW	99	214
	Slater to Warner	27.0	40	RW	107	231
	Warner to Heil	25.0	40	RW	102	220
	Heil to Edinger	21.0	40	RW	91	196
Brookhurst	Garfield to Ellis	53.0	45	95	204	440
	Ellis to Talbert	54.0	45	96	207	446
	Talbert to I-405	61.0	45	104	224	483
	I-405 to Slater	67.0	45	111	239	514
	Slater to Warner	51.0	45	92	199	429
	Warner to Heil	52.0	45	94	202	434
	Heil to Edinger	48.0	45	89	191	412
	Edinger to MacFadden	43.0	45	82	178	383
Ward	Garfield to Ellis	21.0	45	51	110	237
	Ellis to Talbert	17.0	40	RW	79	170
	Talbert to Slater	18.0	40	RW	82	176
	Slater to Warner	10.0	40	RW	55	119
	Edinger to McFadden	10.0	40	RW	55	119

RW - contour falls on roadway right-of-way
ADT - Average Daily Traffic.
* Represents speed used with FHWA noise model and not necessarily posted speed limit.

Land use compatibility was assessed by comparing future traffic noise levels represented in Table 4-A and 4-B and Exhibit 12 with the land/use compatibility matrix presented in Exhibit 11. This land/use compatibility matrix indicates acceptable limits of noise recommended for the City. The following discussion applies to future conditions with or without the Newhope extension unless stated otherwise.

Based on future traffic levels shown in Exhibit 12 the areas of the City that will experience future traffic noise levels up to 75 CNEL are along I-405. In general land uses along other major roadways throughout the City will experience worst case traffic noise levels up to 70 CNEL Areas along other principal arterials in the City will generally experience worst case future traffic noise levels ranging from 60 to 65 CNEL.

The future noise contours (Exhibit 12) show that the noise levels from I-405 constitute a major noise corridor. Commercial and industrial land/uses have a relatively high noise tolerance. According to the compatibility matrix the commercial and industrial land uses along this noise corridor experience unmitigated noise levels up to 75 CNEL and are considered "normally compatible"; new construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction with closed windows and fresh air supply systems or air conditioning, will normally suffice. Other industrial or commercial land uses will be located along major roadways throughout the City and are exposed to worst case noise levels up to 70 CNEL which is "normally compatible" according to the compatibility matrix. Exhibit 12 indicates that the above results will apply for future conditions with or without the Newhope Street extension. However, for future conditions with the Newhope extension, the commercial manufacturing land use adjacent to the extended portion of Newhope Street will experience traffic noise levels up to 70 CNEL which is considered "normally compatible" according to the compatibility matrix.

Residences are planned along much of the I-405 and are exposed to traffic noise from this major noise corridor. The traffic noise contours in Exhibit 12 and the data in Table 4-A indicate that without considering the existing sound walls, the residences along I-405 are exposed to worst case unmitigated noise levels up to 75 CNEL. However, as mentioned earlier the existing sound wall provides a noise reduction ranging from 8 dB to 16 dB depending on the wall height and location along I-405. Therefore, the residences along the I-405 experience mitigated noise levels ranging from just less than 60 CNEL to just below 70 CNEL with the existing freeway sound wall. The compatibility matrix indicates that residences experiencing noise levels less than 60 CNEL are considered "clearly compatible." The land/use compatibility matrix defines "clearly compatible" as "Specified land use is satisfactory based upon the assumption that buildings involved are of normal conventional construction without any special noise insulation requirements." According to the compatibility matrix residential land uses experiencing noise levels between 60 and 65 CNEL are considered "normally compatible" as defined earlier. Those future residences experience mitigated traffic noise levels just less than 70 CNEL are considered "normally incompatible"; New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Future residences experience traffic noise from all of the major arterials which traverse the City. The traffic noise contours shown in Exhibit 12 indicate that the existing residences along Garfield Avenue, Ellis Avenue, Talbert Avenue, Slater Avenue, Warner Avenue, Edinger Avenue, Magnolia Street, Bushard Street, Brookhurst Street, Ward Street, Euclid Street, Newhope Street and Harbor Boulevard experience unmitigated traffic noise levels up to 70 CNEL, which is considered "normally incompatible" according to the compatibility matrix.

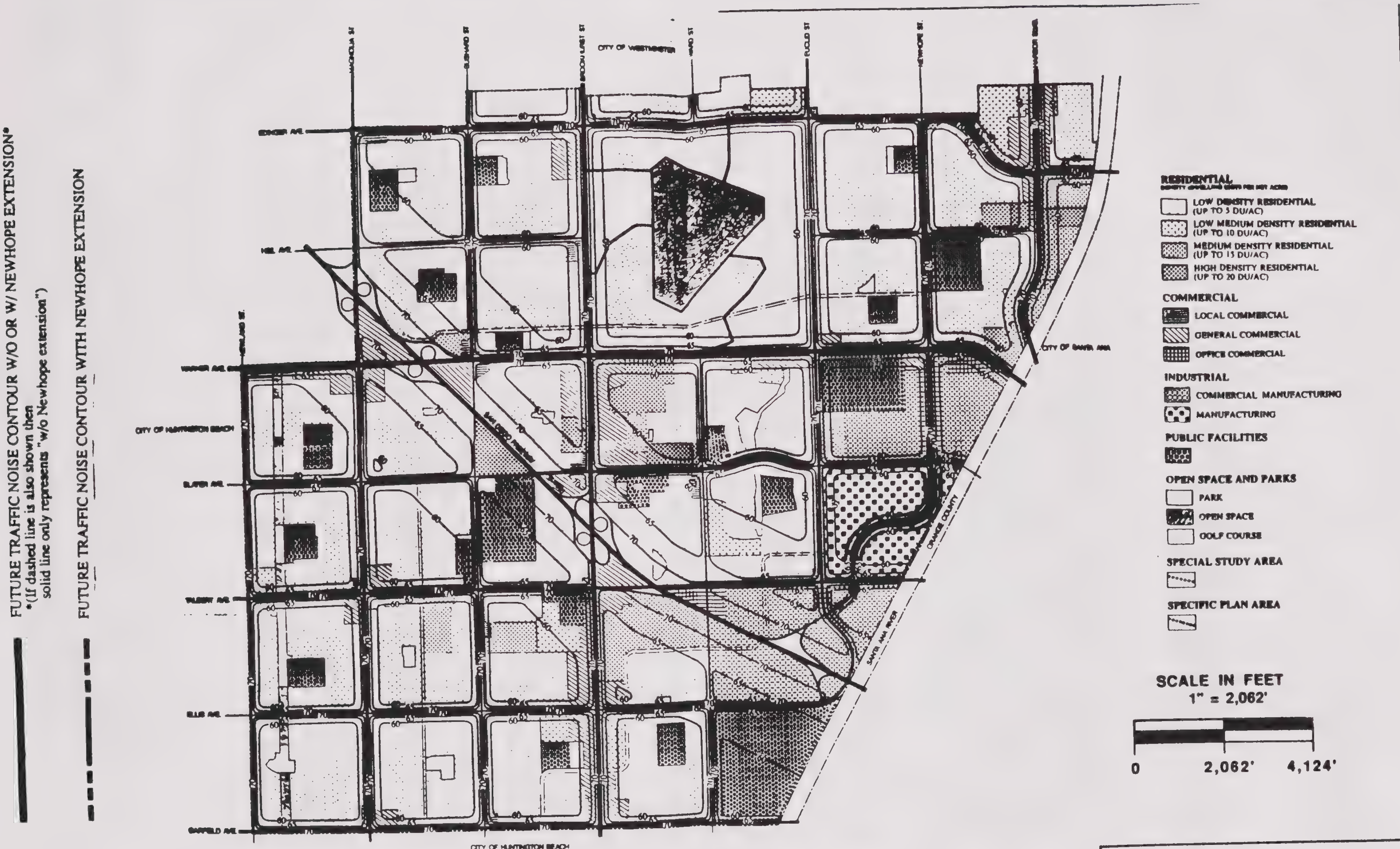


Exhibit 12

Future CNEL Noise Contours

Residences located along Heil Avenue experience traffic noise levels up to 65 CNEL which is considered "normally compatible". Residences which are not located directly adjacent to these roadways will generally experience traffic noise levels less than 60 CNEL and are considered "clearly acceptable".

The City General Plan includes a number of public facility land uses as seen in Exhibit 12. According to the City a number of public facility land uses, including existing school sites, will be converted to residential land uses. The Harper Elementary School, for example, which is located near Ellis Avenue and Newland Street will be converted to residences. Another example is the Lighthouse Maintenance Facility which will be converted to town homes. In addition, the McDowell Elementary School will also be converted to residences. The compatibility of these land uses was included in the above compatibility discussion regarding residential land uses. Noise land/use compatibility for other public facility land use areas will depend upon the type of public facility, and should be addressed in a future EIR for each specific facility.

School sites throughout the City are generally located away from I-405, except for Fountain Valley High School and the McDowell Elementary School. However, as mentioned above, the McDowell Elementary School will eventually be converted to a residential land use. The Fountain Valley High School will experience worst case traffic noise levels up to 75 CNEL, which is considered "normally incompatible." Schools located along Newhope Street, between Slater Avenue and Edinger Avenue, and along Slater Avenue, Bushard Street and Ellis Avenue generally will experience worst case traffic noise levels ranging between just above 60 and to greater than 65 CNEL. The compatibility matrix indicates that school land uses exposed to noise levels in excess of 60 CNEL are considered "normally incompatible." All other school land uses in the City are set back from roadways and experience traffic noise levels less than 60 CNEL, and will be considered "clearly compatible."

The parks in the City generally will experience traffic noise levels ranging from less than 60 CNEL to greater than 65 CNEL, except for Mile Square Park and along I-405. Mile Square Park will experience worst case traffic noise levels in excess of 65 CNEL which is considered "normally incompatible." However, most of the area within Mile Square Park will be located outside the 60 CNEL which is considered "clearly compatible" according to the compatibility matrix. Los Alamos Park, which is adjacent to the I-405, will experience traffic noise levels in up to 75 CNEL and is considered "normally incompatible." Most other parks throughout the City will experience worst case traffic noise levels greater than 65 CNEL and are considered "normally incompatible" as indicated in the compatibility matrix. Those parks which will be set back from major roadways in the City will experience traffic noise levels less than 60 CNEL and are considered "clearly compatible."

Most of the existing churches throughout the City are located along major arterials and will experience worst case traffic noise levels up to 70 CNEL which is considered "normally incompatible." Exhibit 12 indicates that two existing church sites located adjacent to I-405 will experience unmitigated traffic noise levels in up to 75 CNEL, which is considered "normally incompatible."

2.4.3 Mitigation Measures

The noise sources in Fountain Valley consist mainly of transportation related noise. A local government has little direct control of transportation noise at the source. State and Federal agencies have the responsibility to control the noise from the source, such as vehicle noise emission levels. The most effective method the City has to mitigate transportation noise is through reducing the impact of the noise onto the community (i.e. noise barriers and site design review). Mitigation through the design and construction of a noise barrier (wall, berm,

or combination wall/berm) is the most common way of alleviating traffic noise impacts (Exhibit 13). The effect of a noise barrier is critically dependent on the geometry between the noise source and the receiver. A noise barrier effect occurs when the "line of sight" between the source and receiver is penetrated by the barrier. The greater the penetration the greater the noise reduction.

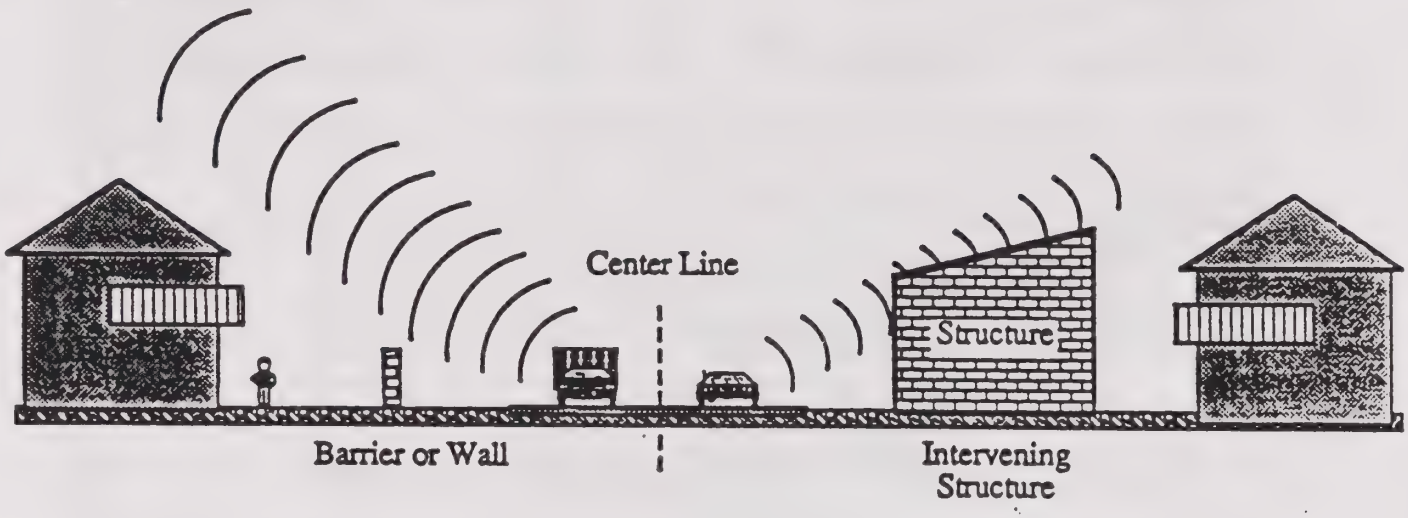
Another common approach to mitigating noise impacts is through the use of setbacks which prevent the "walled in" look. The setback approach simply requires that homes or noise sensitive uses be setback away from the roadway at a distance great enough so that they are outside the noise impact zone. The setback area is landscaped. The landscaping actually provides very little noise reduction, however, residents seem to become less aware of the noise probably because they can not see or have an obstructed view of the road.

2.4.4 Noise/Land Use Compatibility

Noise concerns should be incorporated into land use planning to reduce future noise and land use incompatibilities. This is achieved by establishing standards and criteria that specify acceptable limits of noise for various land uses throughout the City. These criteria are designed to integrate noise considerations into land use planning to prevent noise/land use conflicts. The noise/land use compatibility matrix presented in Exhibit 11 and mentioned previously is used to assess the compatibility of proposed land uses with the noise environment. This matrix is also the basis for the development of specific Noise Standards. The proposed standards, presented in Exhibit 14, represent City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure integrated planning for compatibility between land uses and outdoor noise. The most effective method to control community noise impacts from non-transportation noise sources is through the application of the existing Fountain Valley Noise Ordinance. The existing Noise Ordinance for the City will be a useful tool in controlling any resulting noise impacts on the future residential areas.

The Fountain Valley Noise Ordinance should be applied to protect existing residences from construction noise associated with redevelopment projects planned for the City. As mentioned previously a number of school sites within the City will be converted to residential uses. Construction noise associated with these redevelopment projects could potentially impact adjacent residences. In addition, redevelopment is planned for much of the southeastern side of the City. This area is bounded by Warner Avenue, the Santa Ana River, Ellis Avenue, Ward Street, Talbert Avenue, Euclid Street and Slater Avenue. Construction noise related to development in this area could potentially impact residences adjacent to these roadways. Specific projects planned for this area include development of the area just east of the Fountain Valley Hospital, light industrial/commecial development of the South Park area, and commercial manufacturing development of the "furniture-row" area just south of Talbert Avenue. Contruction noise from the development of the Civic Center, located near the corner of Slater Avenue and Brookhurst Street, and at the corner of Talbert Avenue and Brookhurst Street could also impact adjacent land uses. Finally, the County of Orange's plans for the Sanitation Treatment Plant may include further development on site which could potentially impact the adjacent residences located west of the plant and along Ward Street. The Fountain Valley Noise Ordinance should be applied to protect existing residences against construction related noise impacts due to the above projects.

The Noise Ordinance should also be enforced to protect adjacent residences against noise impacts due to special concerts held within Mile Square Park.



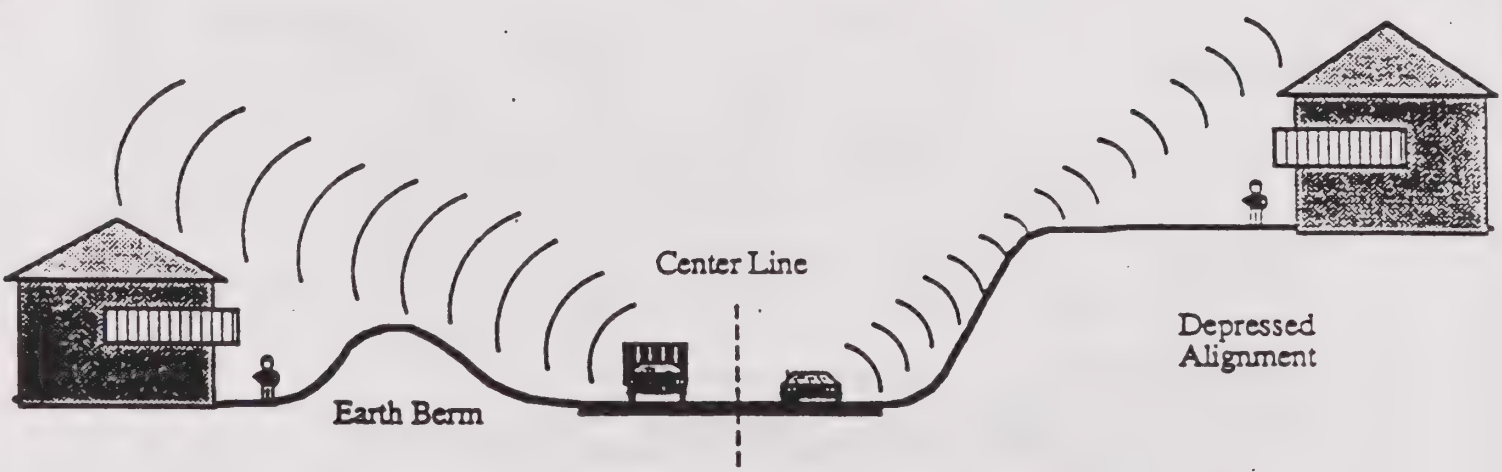


Exhibit 13

Examples of NoiseBarrier Effects

LAND USE CATEGORIES		ENERGY AVERAGE CNEL	
CATEGORIES	USES	INTERIOR [1]	EXTERIOR [2]
RESIDENTIAL	Single Family, Duplex, Multiple Family	45 [3]	60
	Mobile Home	45*	60
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Hotel, Motel, Transient Lodging	45	60 [4]
	Commercial Retail, Bank Restaurant	55	----
	Office Building, Research and Development, Professional Offices, City Office Building	45	----
	Amphitheatre, Concert Hall Auditorium, Meeting Hall	45	----
	Gymnasium (Multipurpose)	50	----
	Sports Club	55	----
	Manufacturing, Warehousing, Wholesale, Utilities	65	----
	Movie Theatres	45	----
INSTITUTIONAL	Hospital, Schools' classroom	45	65
	Church, Library	45	----
OPEN SPACE	Parks	------	65

INTERPRETATION

1. Indoor environment excluding: Bathrooms, toilets, closets, corridors.

2. Outdoor environment limited to: Private yard of single family
   Multi-family private patio or balcony which is served by a means of exit from inside.
   Mobile home Park
   Hospital patio, office patio
   Park's picnic area
   School's playground
   Hotel and motel recreation area

3. Noise level requirement with closed windows. Mechanical ventilation system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of the UBC..

4. Except those areas effected by aircraft noise.

* Due to the variable nature of mobile homes, a 15 dB outdoor to indoor noise reduction with windows closed should be assumed for indicating compliance with this standard.

Exhibit 14

Exterior and Interior Noise Standards

Objective 2.0

Establish measures to reduce noise impacts from traffic noise sources.

Policy 2.a The City shall require the construction of barriers to mitigate sound emissions where necessary or where feasible. Barriers shall not have gaps or openings. The wall shall not stop short of the bridge over-crossing but shall continue until it meets with the walls supporting the bridge. This will prevent openings or gaps in sound walls which could render the sound wall ineffective. An example of these existing gaps is adjacent to the Huntington Valley Baptist Church near the intersection of Slater Avenue and I-405. Action Items 1, 4, 5 and 6 provide specific measures for meeting this objective.

Policy 2.b The City shall require the inclusion of noise mitigation measures in the design of new roadway projects in Fountain Valley.

Policy 2.c The City shall ensure the effective enforcement of City, State and Federal noise levels by all appropriate City divisions.

Policy 2.d The City shall actively advocate motor vehicle noise control requirements for production and sale.

Objective 3.0

Establish measures to control non-transportation noise impacts.

Policy 3.a The City shall enforce the Fountain Valley Noise Ordinance to mitigate noise conflicts between adjacent land uses. The Noise Ordinance establishes noise limits that can not be exceeded at the property line. The Noise Ordinance because it is a City statute can only control noise generated on private property. Therefore, the primary function of the Noise Ordinance is to control stationary noise sources and construction noise.

Policy 3.b Evaluate noise generated by construction activities, and subject them to the requirements of the Noise Ordinance.

Policy 3.c Establish and maintain coordination among the City agencies involved in noise abatement.

Policy 3.d The City shall ensure the effective enforcement of City, State, and Federal noise levels by all appropriate City divisions. The City shall provide quick response to complaints and rapid abatement of noise nuisances with the scope of the City's police powers.

Policy 3.e The City shall establish noise guidelines for City purchasing policy to enforce federal regulations and labeling requirements.

Policy 3.f The City shall coordinate with the California Occupational Safety and Health Administration (Cal-OSHA) to provide information on and enforcement of occupational noise requirements within the City.

4.0 THE PLAN FOR CONTROL AND MANAGEMENT OF NOISE

In order to achieve the goals and objectives of the Noise Element, an effective implementation program developed within the constraints of the City's financial and staffing capabilities is necessary. The underlying purpose is to reduce the number of people exposed to excessive noise and to minimize the future effect of noise in the City. The following are the actions that the City should consider implementing to control the impacts of noise in Fountain Valley.

Issue 1 - Transportation Noise Control - The most efficient and effective means of controlling noise from transportation systems is reducing noise at the source. However, since the City has little direct control over source noise levels because of State and Federal preemption (i.e. State Motor Vehicle Noise Standards), policies should be focused on reducing the impact of the noise on the community. Cooperative efforts with State and Federal offices are essential.

Action 1 Encourage the use of walls and berms in the design of residential or other noise sensitive land uses that are adjacent to major roads, commercial, or industrial areas. Ensure that barriers are designed properly such that sound walls do not have gaps or openings. When applicable, a sound wall shall not stop short of a bridge over-crossing, but shall continue until the wall meets with the walls supporting the bridge. This will prevent openings or gaps in the sound wall, which could render the sound wall ineffective. An example of sound walls along the I-405 with these existing gaps is adjacent to the Huntington Valley Baptist Church, near the intersection of Slater Avenue and I-405.

Action 2 Provide for continued evaluation of truck movements and routes in the City to provide effective separation from residential or other noise sensitive land uses.

Action 3 Encourage the enforcement of State Motor Vehicle noise standards for cars, trucks, and motorcycles through coordination with the California Highway Patrol and Fountain Valley Police Department.

Issue 2 - Noise and Land Use Planning Integration. Community noise considerations are to be incorporated into land use planning. These measures are intended to prevent future noise and land-use incompatibilities.

Action 4 Establish standards that specify acceptable limits of noise for various land uses throughout the City. These criteria are designed to fully integrate noise considerations into land use planning to prevent new noise/land use conflicts. Exhibit 11 shows criteria used to assess the compatibility of proposed land uses with the noise environment. These criteria are the basis for the development of specific Noise Standards. These standards, presented in Exhibit 14, define the City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure noise integrated planning for compatibility between land uses and outdoor noise.

Action 5 Incorporate noise reduction features during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses. The noise referral zones identified in Exhibits 10 and 12 (areas exposed to noise levels of at least 55 CNEL) can be used to identify locations of potential conflicts. New developments will be permitted only if appropriate

mitigation measures are included such that the standards contained in this Element or adopted ordinance are met.

Action 6 Enforce the State of California Uniform Building Code that specifies that the indoor noise levels for residential living spaces not exceed 45 dB LDN/CNEL due to the combined effect of all noise sources. The State requires implementation of this standard when the outdoor noise levels exceed 60 dB LDN/CNEL. The future 60 CNEL noise contour as shown in Exhibit 12 can be used to determine when this standard needs to be addressed. The Uniform Building Code (specifically, the California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Sections T25-28) requires that *"Interior community noise levels (CNEL/LDN) with windows closed, attributable to exterior sources shall not exceed an annual CNEL or LDN of 45 dB in any habitable room."* The code requires that this standard be applied to all new hotels, motels, apartment houses and dwellings other than detached single-family dwellings. Additionally, the standard should be applied to single family homes.

Issue 3 - Community Noise Control for Non-Transportation Noise Sources. The focus of control of noise from non-transportation sources is the Community Noise Ordinance. The ordinance can be used to protect people from noise generated on adjacent properties.

Action 7 Ensure that the Fountain Valley Noise Ordinance protects residences against exposure to excessive noise levels from existing and new stationary noise sources. The purpose of the ordinance is to protect people from non-transportation related noise sources such as music, machinery and pumps, air conditioners and truck traffic on private property. The Noise Ordinance does not apply to motor vehicle noise on public streets, but it does apply to vehicles on private property. The Noise Ordinance is designed to protect quiet residential areas from stationary noise sources. The noise levels encouraged by the ordinance are typical of a quiet residential area.

Action 8 Enforce the Fountain ValleyNoise Ordinance. The most effective method to control community noise impacts from non-transportation noise sources is through application of the community noise ordinance.

Action 9 Require that new commercial, industrial or any redevelopment project or proposed development near existing residential land use, demonstrate compliance with the City Noise Ordinance prior to approval of the project.

Action 10 All new residential projects to be constructed near existing sources of non-transportation noise (including but not limited to commercial facilities, public parks with sports activities) must demonstrate via an acoustical study conducted by a Registered Engineer that the indoor noise levels will be consistent with the limits contained in the noise ordinance.

Action 11 Require construction activity to comply with limits established in the City Noise Ordinance.

Action 12 Designate one agency in the City to act as the noise control coordinator. This will ensure the continued operation of City noise enforcement efforts.

Technical Appendices

Appendix A - Noise Measurement Results

Appendix B - Glossary

Exhibit A
Noise Measurement Results

SITE: *# 1*
LOCATION: *Southeast corner of Washburn and Edinger*
DATE: *November 14, 1991*
TIME: *1:05 p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
67.2	75.3	71.3	63.8	55.8

PRIMARY NOISE SOURCES:
Traffic on Edinger Avenue

LAND USE:
Residence

COMMENTS:
Maximum levels are due to truck pass-by's

SITE: *# 2*
LOCATION: *Corner of Heil and Harbor*
DATE: *November 14, 1991*
TIME: *1:25 pm*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
70.7	77.3	74.3	69.3	63.3

PRIMARY NOISE SOURCES:
Traffic on Harvard Boulevard

LAND USE:
Residential

COMMENTS:
Maximum levels are due to truck pass-by's

SITE: *# 3*
LOCATION: *11355 Warner Avenue (across from Fountain Valley Hospital)*
DATE: *November 14, 1991*
TIME: *12:43 p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
65.6	74.8	68.8	62.8	56.8

PRIMARY NOISE SOURCES:
Traffic on Warner Avenue

LAND USE:
Residential

COMMENTS:
Maximum levels are due to truck pass-by's

SITE: *# 4*
LOCATION: *Northwest corner of Thistle and Brookhurst Street*
DATE: *November 14, 1991*
TIME: *1:55 p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
67.0	74.3	70.8	65.3	50.3

PRIMARY NOISE SOURCES:
Traffic on Brookhurst Street

LAND USE:
Residence

COMMENTS:
Maximum levels are due to truck pass-by's

SITE: # 5
LOCATION: *16887 Daisy Avenue (just north of I-405)*
DATE: *November 14, 1991*
TIME: *2:15p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
71.6	74.3	72.8	71.8	70.3

PRIMARY NOISE SOURCES:
Traffic on I-405

LAND USE:
Residence

COMMENTS:
Maximum levels are due to truck pass-by's

SITE: # 6
LOCATION: *Urbain H. Plavian School (Greenleaf and Warner)*
DATE: *November 14, 1991*
TIME: *2:40 p.m..*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
71.9	78.3	75.8	70.3	63.3

PRIMARY NOISE SOURCES:
Traffic on Warner Avenue

LAND USE:
school

COMMENTS:
Maximum levels are due to truck pass-by's

SITE: # 7
LOCATION: *Huntington Valley Baptist Church (corner of Starfish and Banyon)*
DATE: *November 14, 1991*
TIME: *11:20 p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
68.3	70.8	69.8	68.3	66.3

PRIMARY NOISE SOURCES:
Traffic on I-405

LAND USE:
Church

COMMENTS:
Maximum levels are due to I-405 heavy truck pass-by's

SITE: # 8
LOCATION: *Just adjacent to I-405 (near Oscar & Fremont)*
DATE: *November 14, 1991*
TIME: *3:15 p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
64.4	69.3	66.8	63.8	61.8

PRIMARY NOISE SOURCES:
Traffic on I-405

LAND USE:
Residence

COMMENTS:
Maximum levels are due to helicopter fly-over.

APPENDIX B - GLOSSARY

A-WEIGHTED SOUND LEVEL. The sound pressure level in decibels as measured on a sound level meter using the A-Weighted filter network. The A-Weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgement of loudness.

AMBIENT NOISE LEVEL. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). The average equivalent A-Weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DAY-NIGHT AVERAGE LEVEL (LDN). The average equivalent A-Weighted sound level during a 24-hour day, obtained after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DECIBEL (dB). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A). A-weighted sound level (see definition above)

EQUIVALENT SOUND LEVEL (LEQ). The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

FREQUENCY. The number of times per second that a sound pressure signal oscillates about the prevailing atmosphere pressure. The unit of frequency is the hertz. The abbreviation is Hz.

INTRUSIVE NOISE. That noise which intrudes over and above the ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

L10. The A-Weighted sound level exceeded 10 percent of the sample time. Similarly L50, L90, L99, etc.

NOISE. Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise

SITE: # 9
LOCATION: *The Great American Learning Center (Talbert & Mt. Norby)*
DATE: *November 14, 1991*
TIME: *3:50 p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
71.9	82.3	75.3	67.8	60.3

PRIMARY NOISE SOURCES:
Traffic on Talbert Avenue

LAND USE:
school

COMMENTS:
Maximum levels are due truck pass-by's

SITE: # 10
LOCATION: *Along Brookhurst Street at Adobe River*
DATE: *November 14, 1991*
TIME: *4:15 p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
72.2	80.3	77.3	71.3	61.8

PRIMARY NOISE SOURCES:
Traffic on Brookhurst Street

LAND USE:
Residence

COMMENTS:
Maximum levels are due to truck pass-by's

SITE: # *11*
LOCATION: *Los Alamos Park (adjacent to I-405)*
DATE: *November 14, 1991*
TIME: *11:52 a.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
70.3	72.3	71.3	70.3	69.3

PRIMARY NOISE SOURCES:
Traffic on I-405

LAND USE:
Park

COMMENTS:
Maximum levels are due I-405 truck pass-by's

SITE: # *12*
LOCATION: *Corner of Jay and Magnolia Street*
DATE: *November 14, 1991*
TIME: *4:50 p.m.*

MEASURED VALUES (dBA)

LEQ	L1	L10	L50	L90
72.4	78.8	76.3	71.3	60.8

PRIMARY NOISE SOURCES:
Traffic on Magnolia

LAND USE:
Residential

COMMENTS:
Maximum levels are due to Magnolia truck pass-by's

FOUNTAIN VALLEY GENERAL PLAN
TRAFFIC ANALYSIS

JUNE 1992

AUSTIN-FOUST ASSOCIATES, INC.

annoying. The State Noise Control Act defines noise as "...excessive undesirable sound..."

NOISE ATTENUATION. The ability of a material, substance, or medium to reduce the noise level from one place to another or between one room and another. Noise attenuation is specified in decibels.

NOISE EXPOSURE CONTOURS. Lines drawn around a noise source indicating constant or equal level of noise exposure. CNEL and LDN are typical metrics used.

NOISE REFERRAL ZONES. Such zones are defined as the area within the contour defining a CNEL level of 60 decibels. It is the level at which either State or Federal laws and standards related to land use become important and, in some cases, preempted local laws and regulations. Any proposed noise sensitive development which may be impacted by a total noise environment of 60 dB CNEL or more should be evaluated on a project specific basis.

NOISE SENSITIVE LAND USE. Those specific land uses which have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. Such human activity typically occurs daily for continuous periods of 24 hours or is of such a nature that noise is significantly disruptive to activities that occur for short periods. Specifically, noise sensitive land uses include: residences of all types, hospitals, places of worship and schools.

SOUND LEVEL (NOISE LEVEL). The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

SOUND LEVEL METER. An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Draft

FOUNTAIN VALLEY GENERAL PLAN
TRAFFIC ANALYSIS

Prepared for:

City of Fountain Valley

Prepared by:

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(714) 667-0496

June 3, 1992

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I. INTRODUCTION

This report presents the results of a comprehensive analysis of the city of Fountain Valley highway circulation system. It was prepared to provide technical background data for the Circulation Element of the city's update to the General Plan. The material contained in this report discusses current conditions, presents future traffic forecasts for the Proposed General Plan, and identifies recommended modifications to the General Plan Circulation Element.

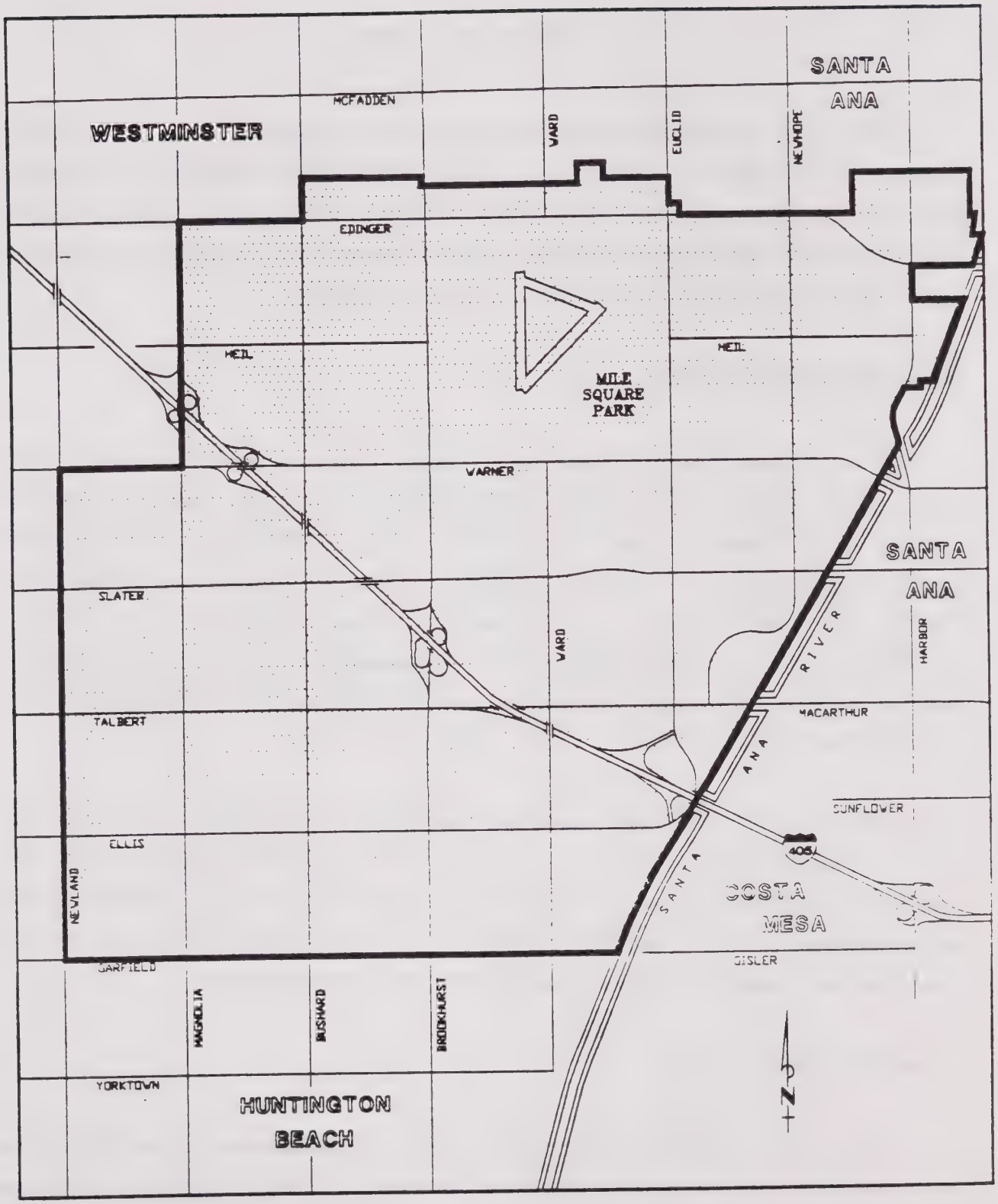
OBJECTIVES AND SCOPE

The traffic analysis material presented in this report was prepared as part of a comprehensive study to update the General Plan for the city of Fountain Valley. The analysis recognizes the interdependency between land use and circulation, and analyzes the Fountain Valley circulation system within that context. The primary objectives of the traffic analysis are to examine traffic demands on the circulation system due to both existing and future development, and to identify the type of improvements that will be needed to serve these demands. Future land use alternatives were identified as part of the planning process, as were alternatives for selected components of the city's arterial roadway system.

The first part of the report summarizes currently prevailing traffic volumes and levels of service on the existing highway system. To provide data for this description of existing traffic conditions, a comprehensive data collection effort was undertaken. For future conditions, a special traffic model was developed which forecasts traffic volumes on the city's circulation system based on future land use projections both within the city and in the surrounding areas.

ANALYSIS AREA

The city of Fountain Valley is located in the southwest central portion of Orange County, and is bounded to the south and to the west by the city of Huntington Beach, to the north by the cities of Westminster, Garden Grove and Santa Ana, and to the east by the Santa Ana River. The current city limits are illustrated in Figure I-1.



LEGEND

Fountain Valley City Limits

Figure I–1

ANALYSIS AREA

METHODOLOGY

The traffic forecast data presented in this report was produced using the Fountain Valley Traffic Model (FVTM). This model, developed for the city to estimate future demands on the circulation system, is a sub-area derivation of the Orange County Transportation Analysis Model (OCTAM-II), and is therefore designed to provide a sub-area forecasting capability that is compatible with OCTAM-II. Future forecasts are based on detailed land use and circulation assumptions within the city of Fountain Valley, and also take into consideration projected growth and circulation improvements in the surrounding areas. A detailed description of the traffic model, including existing year calibration results can be found in a companion document to this report (Reference 1 at the end of this chapter).

The FVTM uses a land use database in the city to derive traffic forecasts, as distinct from the demographic database used in the OCTAM-II model. The primary difference between the two models is in the non-residential component. A demographic database uses employment as a surrogate for land use, whereas the FVTM uses detailed land use specifications (square footage, acreage, etc.) rather than employment. This enables a much finer-grained level of accuracy to be utilized in the FVTM and it establishes a set of land use-based trip generation rates that can be used for future project evaluation.

The traffic analysis carried out here for the city of Fountain Valley recognizes the transportation interrelationships with the surrounding region. Traffic forecasts produced using the FVTM are therefore made within an appropriate regional context which includes both local and regional travel components. The forecasts presented here assume buildout of the city's General Plan Land Use Element as well as General Plan buildout of adjacent cities (Huntington Beach, Santa Ana, Costa Mesa, etc.)

PERFORMANCE CRITERIA

Evaluating the ability of the circulation system to serve the desired future land uses requires the establishment of suitable "performance criteria". These criteria are the means by which future traffic volumes are compared to future circulation system capacity, and the adequacy of that

circulation system assessed.

Performance criteria have a policy component which establishes a desired level of service (LOS) and a technical component which specifies how traffic forecast data can be used to measure the achievement of the criteria. The performance criteria used for evaluating volumes and capacities on the city's arterial highway system are summarized in Table I-1. Level of service standards are included both for midblock average daily traffic (ADT) volumes and for peak hour intersection volumes.

While it is typical to base General Plan circulation system analyses on average daily traffic, level of service estimates are more precisely determined by examining peak hour intersection volumes. Therefore, the circulation system evaluation made in this report uses peak hour volumes as a basis for determining appropriate capacity needs. With the detailed forecasting capability of the FVTM, it is possible to forecast long-range peak hour data on the circulation system with a reasonable level of accuracy. Forecasts are made at an intersection level with individual turn movements being estimated, and based on the assumed intersection geometrics and these turn movement forecasts, intersection capacity utilization (ICU) values are estimated.

The City of Fountain Valley has established LOS "D" (ICU value less than or equal to .90) as the lowest acceptable level of service for peak hour intersection volumes (Table I-2 describes traffic flow quality for different levels of service). This performance standard is used as the basis in defining the recommended highway circulation plan contained in this report and in the updated General Plan Circulation Element, and would be applied consistently for evaluating General Plan land use and circulation system changes. For ADT link volumes, LOS "D" is used as a general design guideline for monitoring capacity needs on the city's network of arterial roadways.

DEFINITIONS

Certain terms used throughout this report are defined below to clarify their intended meaning:

ADT	Average Daily Traffic.
DU	Dwelling Unit.

Table I-1

CIRCULATION SYSTEM PERFORMANCE CRITERIA

The following are the performance criteria used for comparing traffic volumes and capacities on the City's arterial highway system:

AVERAGE DAILY TRAFFIC (ADT) LINK VOLUMES

Level of Service D - Major, Primary and Secondary Arterials and Commuter Roadways.

Table A below shows the ADT volumes corresponding to this level of service.

PEAK HOUR INTERSECTION VOLUMES

Level of Service D - All roadways.

Table B below shows how this level of service is specified.

Table A
ADT LEVEL OF SERVICE VOLUME

CLASSIFICATION	------- MAXIMUM VOLUME ------- LOS C	LOS D	LOS E
Major Arterial (6 lanes divided)	45,000	50,600	56,300
Primary Arterial (4 lanes divided)	30,000	33,800	37,500
Secondary Arterial (4 lanes undivided)	20,000	22,500	25,000
Commuter Roadway (2 lanes)	10,000	11,300	12,500

Table B
PEAK HOUR LEVEL OF SERVICE

Peak hour intersection level of service (LOS) to be based on intersection capacity utilization (ICU) values calculated as follows:

Saturation flow rate:	1700 Vehicles Per Hour (VPH)
Clearance interval:	.05 of an ICU value

Level of service values are as follows:

LEVEL OF SERVICE	MAXIMUM ICU VALUE
LOS A	.60
LOS B	.70
LOS C	.80
LOS D	.90
LOS E	1.00

Table I-2

PEAK HOUR LEVEL OF SERVICE DESCRIPTIONS

LEVEL OF SERVICE	TRAFFIC FLOW QUALITY	ICU VALUE
A	Low volumes; high speeds; speed not restricted by other vehicles; all signal cycles clear with no vehicles waiting through more than one signal cycle.	0.00 - 0.60
B	Operating speeds beginning to be affected by other traffic; between one and 10 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods.	0.61 - 0.70
C	Operating speeds and maneuverability closely controlled by other traffic; between 11 and 30 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods; recommended ideal design standards.	0.71 - 0.80
D	Tolerable operating speeds; 31 to 70 percent of the signal cycle have one or more vehicles which wait through more than one signal cycle during peak traffic periods; often used as design standard in urban areas.	0.81 - 0.90
E	Capacity; the maximum traffic volume an intersection can accommodate; restricted speeds; 71 to 100 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods.	0.91 - 1.00
F	Long queues of traffic; unstable flow; stoppages of long duration; traffic volume and traffic speed can drop to zero; traffic volume will be less than the volume which occurs at Level of Service "E."	Above 1.00

Source: Highway Capacity Manual, Highway Research Board Special Report 87, National Academy of Sciences, Washington D.C., 1965, Page 320

Definitions: **Peak Traffic Period** - The period of time in which the greatest number of vehicle trips are traveling on given roadways.

Signal Cycle - Any complete sequence of signal indications.

Queue - A line of vehicles.

ICU	Intersection Capacity Utilization. A factor used to measure the volume-to-capacity ratio for an intersection and determine the level of service.
LOS	Level of Service. A scale used to evaluate circulation system performance based on intersection ICU values or volume/capacity ratios of arterial segments. The levels range from "A" to "F", with LOS "A" representing free flow traffic and LOS "F" representing severe traffic congestion.
Peak Hour	The hour during the AM peak period (typically 7 AM - 9 AM) or the PM peak period (typically 3 PM - 6 PM) in which the greatest number of vehicle trips are generated by a given land use or are travelling on a given roadway.
TSF	Thousand square feet.
VPD	Vehicles Per Day. This has the same meaning as ADT, but is generally used in a trip generation context rather than in reference to a highway volume at some selected location.
VPH	Vehicles Per Hour.
V/C	Volume-to-Capacity Ratio. This is typically described as a percentage of capacity utilized by existing or projected traffic on a segment of arterial or an intersection turn movement.

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2. "Master Plan of Arterial Highways," County of Orange, Environmental Management Agency, Transportation Planning, August 1989.

3. " Highway Capacity Manual," Highway Research Board, Special Report 87, National Academy of Sciences, Washington D.C., 1965.

4. "Traffic Manual," State of California, Department of Transportation, 1985.

5. "Trip Generation," (5th Edition), Institute of Transportation Engineers, 1991.

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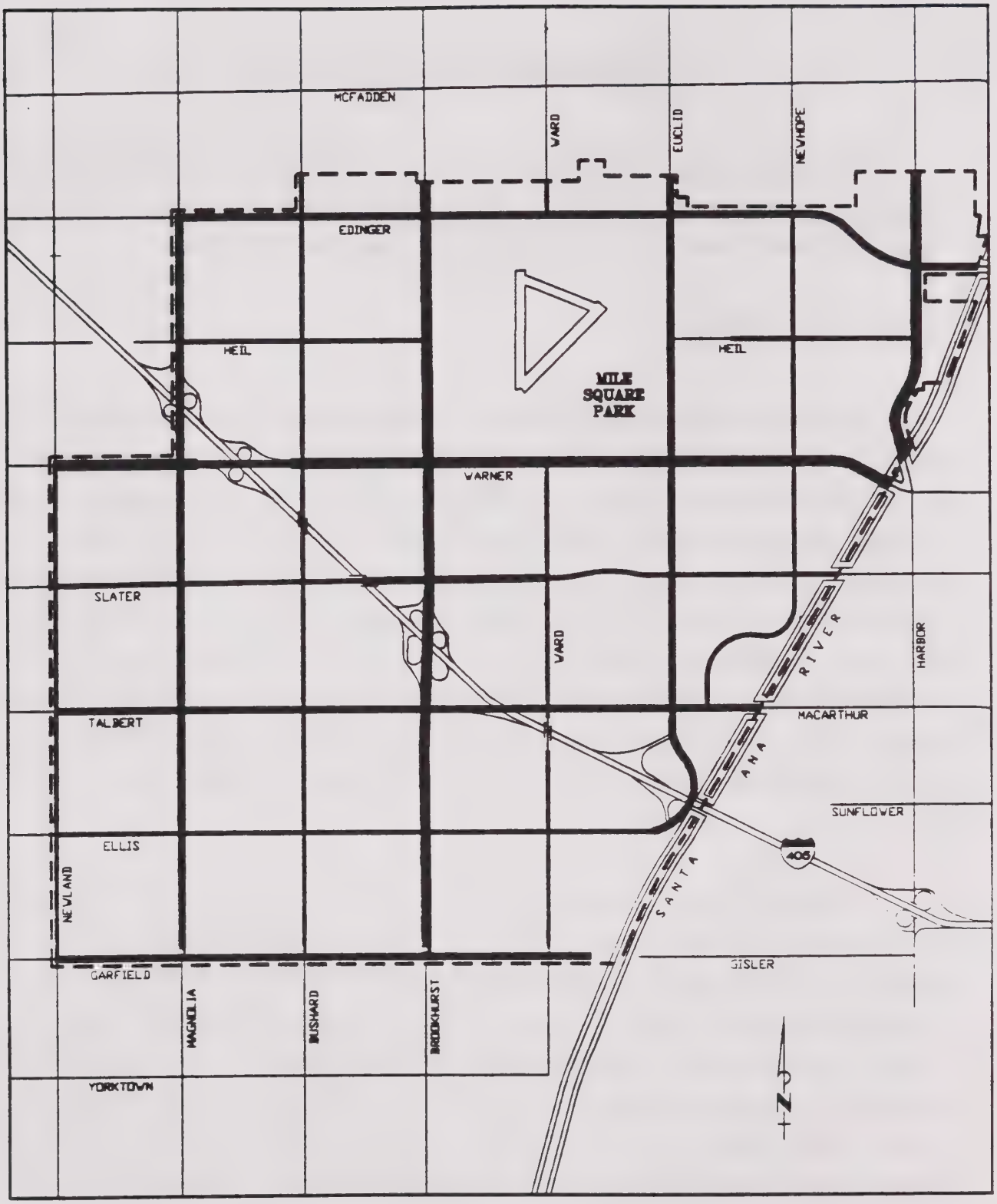
II. TRANSPORTATION SETTING

This chapter describes the existing transportation conditions in the city of Fountain Valley. The existing roadway system is first discussed, followed by a summary of recent traffic volume counts and existing levels of service at key intersections and freeway interchange ramps.

EXISTING ROADWAYS

The existing roadway system in the city of Fountain Valley is illustrated in Figure II-1. The number of midblock travel lanes on individual roadway segments is represented on the diagram by the band width of each arterial facility. As the diagram illustrates, the arterial system is primarily a grid system with spacings of one-half mile. The grid system is disrupted by physical entities such as Mile Square Park, the Santa Ana River, and the San Diego Freeway (I-405) which traverses southeast to northwest through the city. The I-405 freeway provides the primary source of regional access to the city with interchanges at Magnolia Street/Warner Avenue, Brookhurst Street and Euclid Avenue/Ellis Avenue. The freeway operates with five travel lanes in each direction south of the Brookhurst Street interchange and four lanes in each direction north of the interchange. An additional high-occupancy vehicle (HOV) lane is currently constructed in each direction through the city.

On the arterial system, primary east/west travel in the city is provided by Warner Avenue, which operates with three lanes in each direction except for the four lane crossing (two lanes in each direction) of the I-405 freeway, and by Edinger Avenue, Slater Avenue and Talbert Avenue, each of which operate with two lanes in each direction with the exception of the Talbert Avenue segment between Euclid Street and the Santa Ana River, which operates with five travel lanes (three lanes westbound and two lanes eastbound). It should be noted that each of these east/west arterials contains a bridge crossing of the Santa Ana River. Secondary east/west travel is provided by Ellis Avenue, Garfield Avenue, and Heil Avenue which is discontinuous at Mile Square Park. Each of these facilities operates with two travel lanes in each direction with the exception of the segment of Heil Avenue between Euclid Street and one-quarter mile west of Newhope Street which operates with one lane in each direction.



LEGEND

- Freeway
- Major Arterial (6 Lanes)
- Primary Arterial (4 Lanes)
- Secondary Arterial (4 Lanes)
- Commuter Roadway (2 Lanes)
- City Limit Boundary

Figure II–1

EXISTING CIRCULATION SYSTEM

Primary north/south arterial travel is provided by Brookhurst Street and Harbor Boulevard, both of which operate with three lanes in each direction, and by Magnolia Street and Euclid Street, both of which operate with two lanes in each direction. Secondary north/south travel is provided by Newland Street, Bushard Street, Ward Street which is discontinuous at Mile Square Park, and Newhope Street. Each of these facilities operates with two lanes in each direction with the exception of the two lane (one lane in each direction) Ward Street crossing of the I-405 freeway.

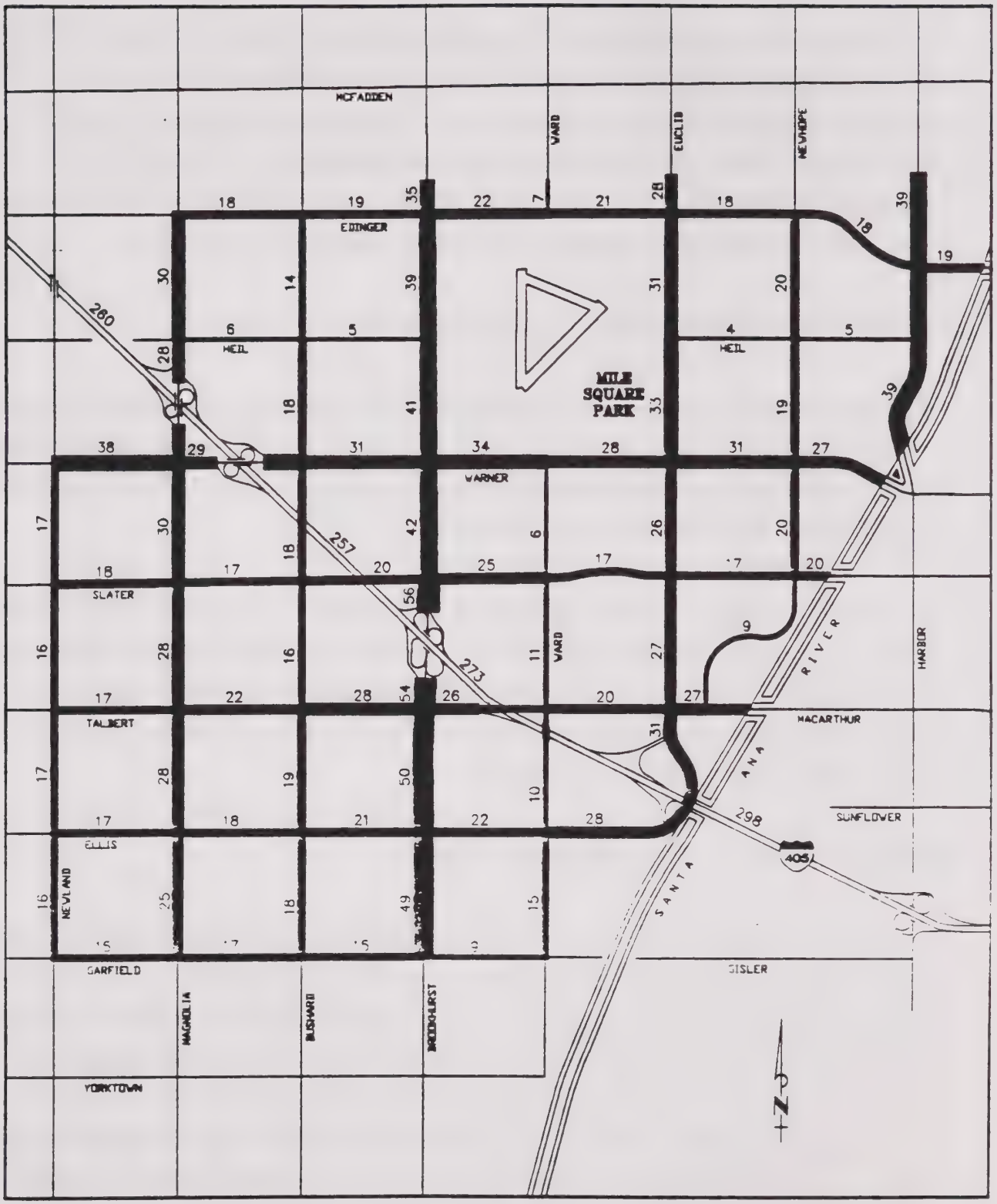
CONGESTION MANAGEMENT PLAN ROADWAYS

Recent state legislation requires the preparation of a Congestion Management Plan (CMP) for Orange County. The CMP is intended to make cities responsible for the regional traffic impacts of their land use decisions. Compliance with the standards outlined in the CMP will allow cities to continue receiving gas tax revenues from the State.

The Draft CMP has been completed by the Orange County Transportation Authority (OCTA), and has included Warner Avenue as part of the county's proposed CMP roadway network. Inclusion of this roadway in the CMP network will require maintaining level of service (LOS) "E" or better on this roadway, along with other standards that have to be met. No other streets in the city are proposed for inclusion into the CMP system.

TRAFFIC VOLUMES AND LEVELS OF SERVICE

Recent average daily traffic (ADT) volumes on the city's circulation system are shown in Figure II-2. ADT volumes reflect the traffic volume on a particular segment of roadway during a 24-hour period. Traffic counts for the city's arterial roadway system were collected between November, 1989 and January, 1991, and existing volumes on the San Diego Freeway were taken from 1990 Caltrans counts. The heaviest volumes on the arterial system occur on Brookhurst Street with volumes ranging from 35,000 vehicles per day (VPD) north of Edinger Avenue to 56,000 VPD south of Slater Avenue, and on Harbor Boulevard which currently carries 39,000 VPD. Moderately heavy traffic volumes are also noted on Warner Avenue (27,000 - 38,000 VPD), Magnolia Street (25,000-30,000 VPD) and Euclid Street (26,000 - 33,000 VPD).



Source: 1989–1991 City of Fountain Valley traffic counts and 1990 Caltrans counts

Notes: 1) ADT – Average Daily Traffic
2) Band width scale: 1/8 inch=50,000 ADT
3) Volumes shown only for arterials within the city of Fountain Valley

Figure II–2

EXISTING ADT VOLUMES (000'S)

Existing AM and PM peak hour turn movement counts were also collected for a set of major intersections throughout the city. Peak period counts were collected from 7:00 to 9:00 AM and 4:00 to 6:00 PM, and the peak hour of each individual intersection represents the maximum one-hour total volume within the two-hour peak period. These peak hour turn volumes were evaluated by comparing upstream and downstream intersection volumes with corresponding peak hour midblock volumes derived from the 24-hour ADT counts. Appropriate adjustments to the peak hour turn movement counts were carried out based on this comparison.

Existing intersection levels of service are calculated using the adjusted peak hour counts in combination with the geometric lane configuration of each intersection location. The technique used to assess the operation of an intersection is known as intersection capacity utilization (ICU). A level of service (LOS) scale is used to evaluate intersection performance based on ICU values. The levels range from "A" to "F", with LOS "A" representing free flow conditions and LOS "F" representing severe traffic congestion. As discussed in the previous chapter, the City of Fountain Valley uses a value of .90 (LOS "D") as the maximum acceptable ICU value.

Existing ICU values for the intersections studied here are listed in Table II-1 together with the date on which each intersection count was performed, and Figures II-3 and II-4 illustrate the AM and PM peak hour ICU values, respectively. Detailed ICU calculations can be found in Appendix A. As the summaries indicate, the following intersections show ICU values greater than .90, indicating that on the day of the count, the maximum acceptable ICU value was exceeded:

Magnolia and Warner
Euclid and I-405 NB Ramps
I-405 SB Ramps and Euclid/Ellis

Existing peak hour ramp volumes at each of the I-405 interchanges in the city were derived based on Caltrans counts performed in 1990 and 1991 in comparison with volumes from available interchange intersection turn movement counts. Figure II-5 presents the existing peak hour ramp volumes and corresponding volume/capacity (V/C) ratios. As the figure indicates, based on an estimated capacity of 1,600 vehicles per lane, each of the ramps currently operates at LOS "D" or better (V/C less than .91) with the exception of the southbound on-ramp at Euclid Street in the AM peak hour and the northbound off-ramp at Euclid Street in the PM peak hour. It should be noted

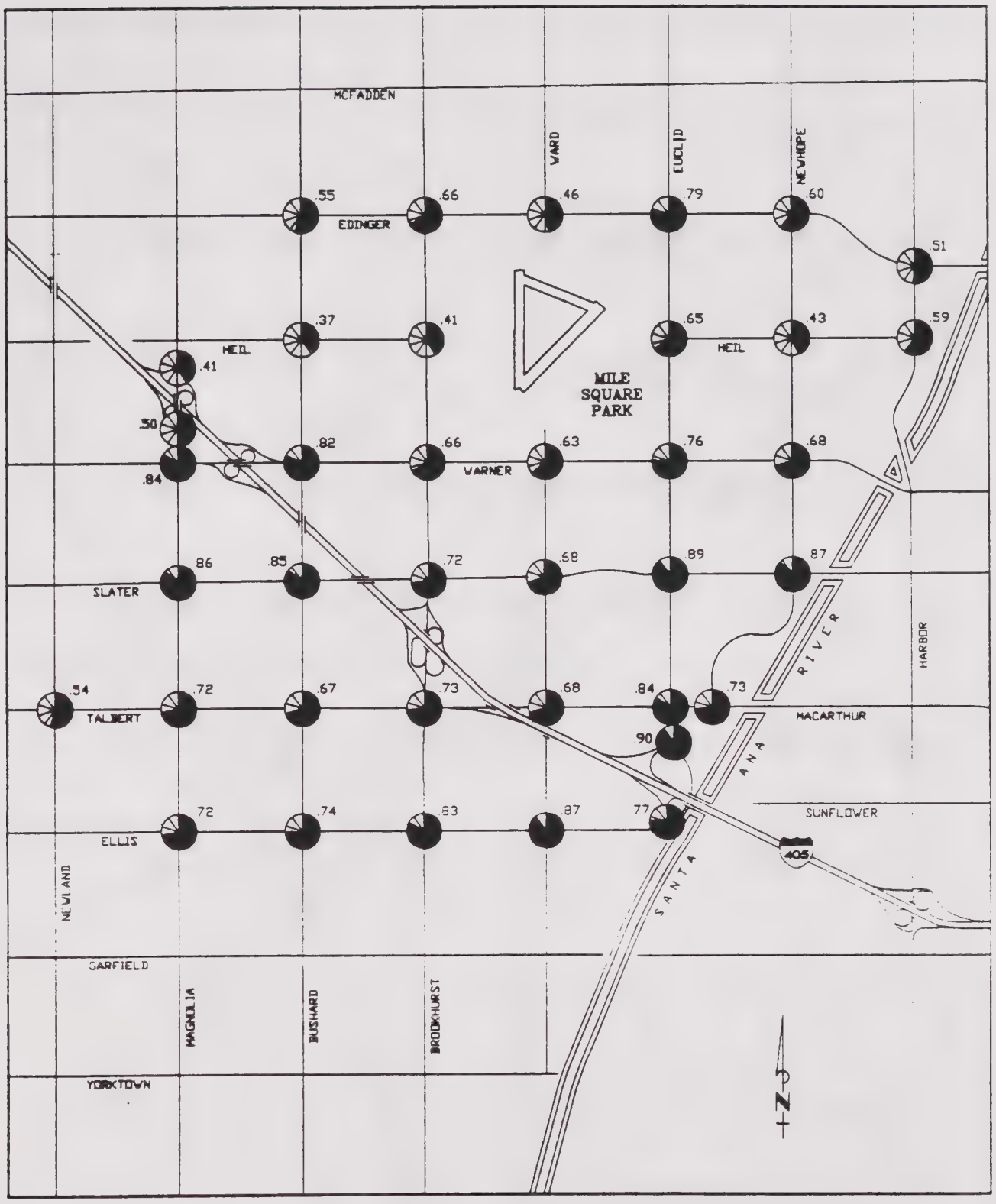
Table II-1

EXISTING ICU SUMMARY

INTERSECTION	AM	COUNT DATE	PM	COUNT DATE
3. Newland & Talbert	.54	04/05/90	.66	04/04/90
8. Magnolia & I-405 NB Ramps	.41	04/10/90	.81	04/12/90
9. Magnolia & I-405 SB Ramps	.50	04/12/90	.78	04/12/90
10. Magnolia & Warner	.84	04/10/90	.94 *	04/10/90
11. Magnolia & Slater	.86	10/05/90	.80	10/09/90
12. Magnolia & Talbert	.72	10/09/90	.81	10/11/90
13. Magnolia & Ellis	.72	10/12/90	.76	10/23/90
15. Bushard & Edinger	.55	3/91	.65	3/91
16. Bushard & Heil	.37	11/09/90	.49	11/14/90
17. Bushard & Warner	.82	10/15/90	.90	10/17/90
18. Bushard & Slater	.85	10/16/90	.88	10/15/90
19. Bushard & Talbert	.67	10/12/90	.77	10/25/90
20. Bushard & Ellis	.74	10/12/90	.76	10/29/90
22. Brookhurst & Edinger	.66	10/16/90	.74	10/18/90
23. Brookhurst & Heil	.41	03/20/90	.55	03/20/90
24. Brookhurst & Warner	.66	03/21/90	.84	03/21/90
25. Brookhurst & Slater	.72	03/27/90	.79	03/27/90
26. Brookhurst & Talbert	.73	03/22/90	.81	03/22/90
27. Brookhurst & Ellis	.83	03/20/90	.90	03/20/90
29. Ward & Edinger	.46	3/91	.48	3/91
30. Ward & Warner	.63	10/22/90	.59	10/17/90
31. Ward & Slater	.68	10/18/90	.69	10/22/90
32. Ward & Talbert	.68	10/19/90	.79	10/24/90
33. Ward & Ellis	.87	10/18/90	.73	10/25/90
35. Euclid & Edinger	.79	10/12/90	.77	10/24/90
36. Euclid & Heil	.65	10/15/90	.70	10/24/90
37. Euclid & Warner	.76	10/02/90	.85	10/11/90
38. Euclid & Slater	.89	10/11/90	.85	10/04/90
39. Euclid & Talbert	.84	10/11/90	.75	10/11/90
40. Euclid & I-405 NB Ramps	.90	10/05/90	1.13 *	10/04/90
41. I-405 SB Ramps & Euclid/Ellis	.77	10/15/90	1.01 *	10/03/90
42. Newhope & Edinger	.60	3/91	.77	3/91
43. Newhope & Heil	.43	11/08/90	.55	11/08/90
44. Newhope & Warner	.68	10/16/90	.80	10/15/90
45. Newhope & Slater	.87	10/16/90	.85	10/18/90
46. Newhope & Talbert	.73	3/91	.63	3/91
47. Harbor & Edinger	.51	10/12/90	.59	10/29/90
48. Harbor & Heil	.59	11/09/90	.56	11/14/90

Level of service ranges: .00 - .60 A
.61 - .70 B
.71 - .80 C
.81 - .90 D
.91 - 1.00 E
Above 1.00 F

* Exceeds level of service "D"

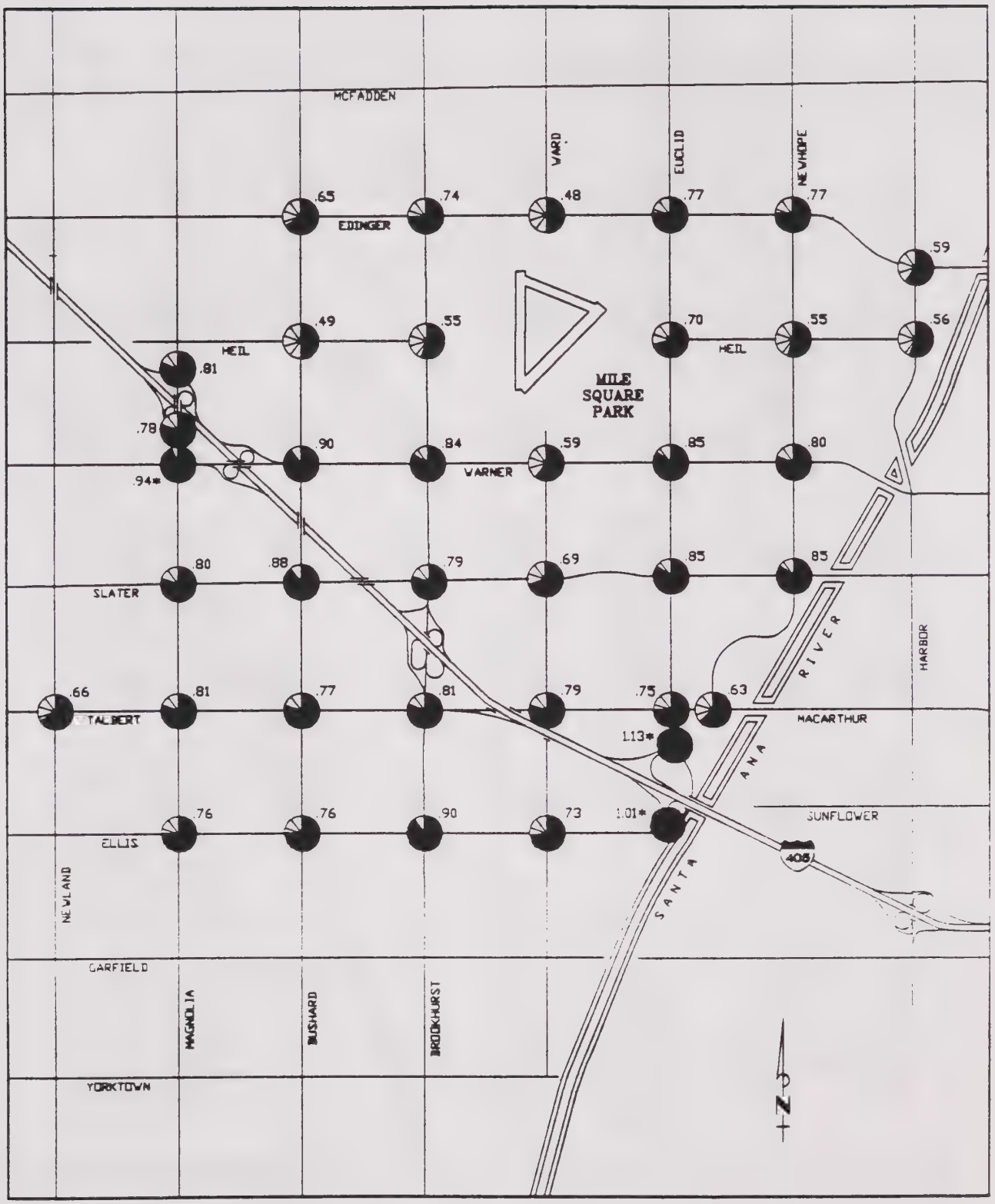


Level of service (LOS) ranges:

LOS A .00–.60	LOS D .81–.90
LOS B .61–.70	LOS E .91–1.00
LOS C .71–.80	LOS F Above 1.00

Figure II–3

EXISTING AM PEAK HOUR ICUS



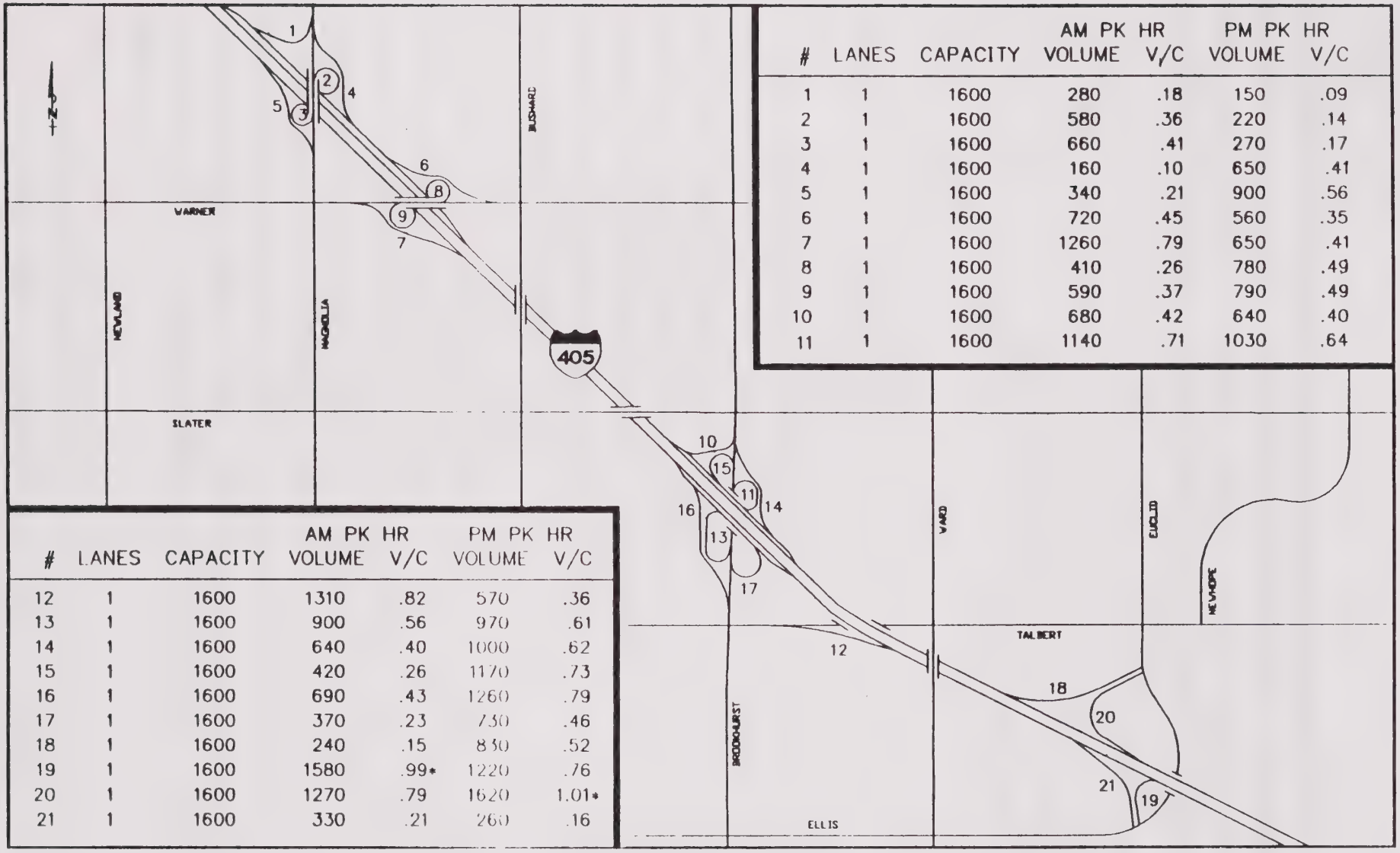
Level of service (LOS) ranges:

LOS A .00–.60	LOS D .81–.90
LOS B .61–.70	LOS E .91–1.00
LOS C .71–.80	LOS F Above 1.00

* Exceeds LOS "D"

Figure II–4

EXISTING PM PEAK HOUR ICUS



#	LANES	CAPACITY	AM PK HR VOLUME	AM PK HR V/C	PM PK HR VOLUME	PM PK HR V/C
1	1	1600	280	.18	150	.09
2	1	1600	580	.36	220	.14
3	1	1600	660	.41	270	.17
4	1	1600	160	.10	650	.41
5	1	1600	340	.21	900	.56
6	1	1600	720	.45	560	.35
7	1	1600	1260	.79	650	.41
8	1	1600	410	.26	780	.49
9	1	1600	590	.37	790	.49
10	1	1600	680	.42	640	.40
11	1	1600	1140	.71	1030	.64
12	1	1600	1310	.82	570	.36
13	1	1600	900	.56	970	.61
14	1	1600	640	.40	1000	.62
15	1	1600	420	.26	1170	.73
16	1	1600	690	.43	1260	.79
17	1	1600	370	.23	730	.46
18	1	1600	240	.15	830	.52
19	1	1600	1580	.99*	1220	.76
20	1	1600	1270	.79	1620	1.01*
21	1	1600	330	.21	260	.16

Level of service (LOS) ranges:

LOS A .00–.60	LOS D .81–.90
LOS B .61–.70	LOS E .91–1.00
LOS C .71–.80	LOS F Above 1.00

* Exceeds LOS "D"

Figure II–5

EXISTING PEAK HOUR
FREEWAY RAMP VOLUMES

that some locations experience lower levels of service than implied by these theoretical values due to close intersection proximity, unsignalized intersections and/or inadequate turn pocket or weaving length availability. Also, peak period ramp volumes are effectively "metered" or limited by existing freeway congestion which could cause freeway destined vehicles to queue back onto the city's arterial system.

III. FUTURE TRAFFIC DEMANDS

This chapter discusses future traffic demands in relation to projected land use and trip generation in the city of Fountain Valley and the surrounding area. Trip generation estimates for existing conditions and buildout of the proposed General Plan are presented first, and then projected travel patterns into, out of, and through the city are discussed. At the end of this chapter, comparative characteristics for two alternatives to the proposed land plan are discussed. In Chapter IV, impacts on the city's circulation system due to the proposed General Plan trip generation estimates are analyzed.

LAND USE AND TRIP GENERATION

The traffic generated by a certain type of land use is estimated by applying a representative trip generation rate to the amount of that land use in the area under consideration. The Fountain Valley Traffic Model (FVTM) uses a set of such trip generation rates to calculate both peak hour and ADT trips by land use. These rates have been derived from various sources as documented in Appendix A. For traffic modeling purposes, the traffic analysis study area is divided into traffic analysis zones, and the application of the trip generation rates to the land use in each zone results in zonal estimates of daily and peak hour trips.

Land use data for existing (1990) and buildout (Post-2010) conditions was prepared as part of the General Plan update study for the Fountain Valley portion of the analysis area. Additional information was then obtained from the City of Huntington Beach and from the County of Orange. Future development within the city as depicted in the proposed General Plan Land Use Element can be classified either as new development or as intensified existing development. New development is defined as any future land use that will be established either on existing vacant parcels or on underutilized sites (e.g., closed school sites). Intensification of existing uses applies to parcels that are not currently built to the maximum intensity permitted in the proposed General Plan land use designations.

For the purposes of this study, it was assumed that existing residential uses are generally built out to the densities specified in the proposed plan, and that the average density for existing

commercial development is somewhat less than specified in the proposed plan. The following table summarizes comparative existing and Post-2010 (proposed General Plan) floor area ratios (FARs) that were used to estimate commercial square footage from existing and future commercial acreage:

PROPOSED GENERAL PLAN LAND USE DESIGNATION	EXISTING (1990) CONDITIONS	POST-2010 CONDITIONS
Local Commercial	.22 FAR	.35 FAR
General Commercial	.40 FAR	.50 FAR
Office Commercial	.45 FAR	.50 FAR
Commercial Manufacturing	.50 FAR	.60 FAR

For comparison purposes, the different land uses within the city were aggregated into five generalized land use categories. A comparison of the land use and trip generation estimates within the city for existing development and the Post-2010 proposed General Plan is summarized in Table III-1. Existing development within the city is comprised of 17,947 residential dwelling units, 6,507 thousand square feet (TSF) of commercial and office use, and 6,808 TSF of manufacturing use. The "other" category includes uses such as colleges, schools, parks, golf courses, and agriculture. The total average daily vehicle trips generated by existing uses within the city is estimated at 466,500 ADT, 35 percent of which is attributed to residential uses, and the remaining 65 percent to non-residential uses. The proposed General Plan would increase dwelling units to 18,311 and commercial/office/manufacturing uses to 19,303 TSF, and would generate an estimated 587,600 ADT, an increase of 26 percent over the existing ADT estimate.

To illustrate how projected increases in trip generation are distributed throughout the city, use is made of the five city of Fountain Valley sub-areas illustrated in Figure III-1. Table III-2 summarizes the ADT trip generation for each sub-area for existing and Post-2010 proposed General Plan conditions. As the table indicates, the central sub-area shows the highest level of growth with a projected ADT increase of 38 percent over the existing ADT estimate. For the remaining four subareas, the projected ADT increases range from 21 to 24 percent over existing conditions.

Table III-1

LAND USE AND TRIP GENERATION SUMMARY

LAND USE	UNITS	AMOUNT	ADT
EXISTING (1990)			
1. Residential	DUs	17,947	164,800
2. Local/General/Office Commercial	TSF	5,805	193,600
3. Office Commercial	TSF	702	10,800
4. Commercial Manufacturing	TSF	6,808	47,500
5. Other	--	--	49,800
Total ADT			466,500
POST-2010 PROPOSED GENERAL PLAN			
1. Residential	DUs	18,331	168,000
2. Local/General/Office Commercial	TSF	7,671	265,900
3. Office Commercial	TSF	2,379	36,500
4. Commercial Manufacturing	TSF	9,253	64,500
5. Other	--	--	52,700
Total ADT			587,600

Note: DUs - Dwelling Units
TSF - Thousand Square Feet
ADT - Daily Trips

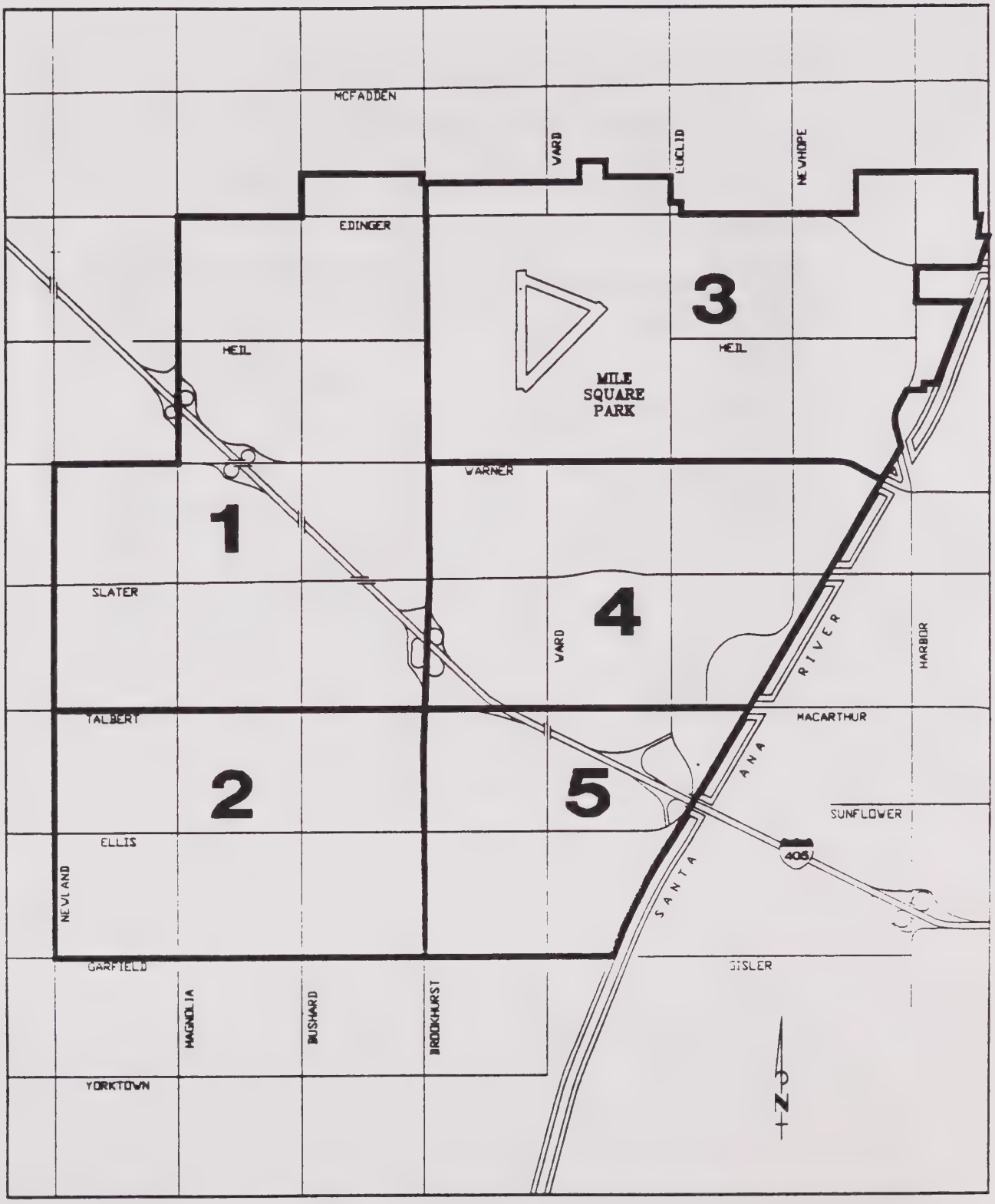


Figure III-1

LAND USE AND TRIP GENERATION
SUMMARY SUB-AREAS

Table III-2

CITY TRIP GENERATION COMPARISON

City Sub-Area*	Existing ADT	Post-2010 Proposed General Plan ADT	Increase**
1. Northwest	130,700	157,600	21%
2. Southwest	73,600	89,000	21%
3. Northeast	67,600	81,500	21%
4. Central	133,400	183,700	38%
5. Southeast	61,200	75,800	24%
TOTAL	466,500	587,600	26%

Note: ADT - Average Daily Trips

* See Figure III-1 for sub-area definitions
** Percent increase over existing ADT estimate

TRAVEL PATTERNS

A significant number of trips on the city's circulation system have at least one end of the trip (i.e., origin or destination) outside the city. These are called "external trips," as distinct from "internal trips" which have both ends of the trip within the city. There are also "thru" trips which have neither trip origin nor destination within the city, but which use some portion of the analysis area roadway system to pass through the city. The overall city of Fountain Valley internal/external travel patterns derived from the traffic forecasting model for existing and Post-2010 proposed General Plan conditions are summarized as follows:

	Trips Which Begin and End Within the City of Fountain Valley	Trips Which Begin or End Within the City of Fountain Valley	Total
Existing (1990)	68,000 (17%)	331,000 (83%)	399,000 (100%)
Post-2010 Proposed General Plan	83,000 (16%)	422,000 (84%)	505,000 (100%)

As this summary indicates, the percentage of internal trips (trips which begin and end within the city of Fountain Valley) projected for the future is relatively unchanged from today's travel patterns.

ALTERNATIVE LAND USE PLANS

In this section, the traffic generating characteristics of two alternative citywide land use plans are summarized and compared with the proposed General Plan trip generation estimates presented earlier. The first alternative reflects the land use plan contained in the currently adopted General Plan Land Use Element, and is therefore referred to here as the current General Plan. The second alternative is a variation on the proposed General Plan land use plan discussed earlier, and is referred to here as the alternate General Plan.

Citywide land use totals for the two alternative plans were prepared according to the generalized land use categories used earlier in this chapter to summarize existing and proposed General Plan land uses. Table III-3 summarizes the land use and ADT trip generation estimates for the two alternatives together with the proposed General Plan statistics for comparison. As the table indicates, the current General Plan is projected to generate a citywide total of 517,700 ADT, 12 percent less the 587,600 forecasted for the proposed General Plan. The lower trip generation is primarily due to less of the high generating local/general/office commercial development compared to low generating industrial (commercial manufacturing) uses. It should be noted that the amount of commercial manufacturing square footage shown is based on an FAR of 1.00 as permitted in the current General Plan, compared with a FAR of .60 for the proposed General Plan.

Since the alternate General Plan scenario involves only a minor shift from residential use to public facility development (listed as "other" category on summary table), the resulting ADT trip generation estimate for that case is very similar in magnitude to the ADT projection for the proposed General Plan.

Table III-3

LAND USE ALTERNATIVES

LAND USE	UNITS	AMOUNT	ADT
POST-2010 PROPOSED GENERAL PLAN			
1. Residential	DUs	18,331	168,000
2. Local/General/Office Commercial	TSF	10,050	302,400
4. Commercial Manufacturing	TSF	9,253	64,500
5. Other	--	--	52,700
Total ADT			587,600
POST-2010 CURRENT GENERAL PLAN			
1. Residential/Office	DUs	17,110	157,000
2. Local/General/Office Commercial	TSF	4,020	121,000
4. Commercial Manufacturing	TSF	24,810	173,000
5. Other	--	--	66,700
Total ADT			517,700
POST-2010 ALTERNATE GENERAL PLAN			
1. Residential/Office	DUs	18,070	165,800
2. Local/General/Office Commercial	TSF	10,050	302,400
4. Commercial Manufacturing	TSF	9,253	64,500
5. Other	--	--	53,800
Total ADT			586,500

Note: DUs - Dwelling Units
TSF - Thousand Square Feet
ADT - Daily Trips

IV. CIRCULATION SYSTEM ANALYSIS

This chapter examines the Post-2010 traffic forecasts based on the proposed General Plan land uses in relation to the future circulation system in the analysis area. Traffic forecasts and projected levels of service based on the currently planned circulation system are summarized, and in chapter V, recommended circulation plan modifications which address the identified circulation deficiencies are presented.

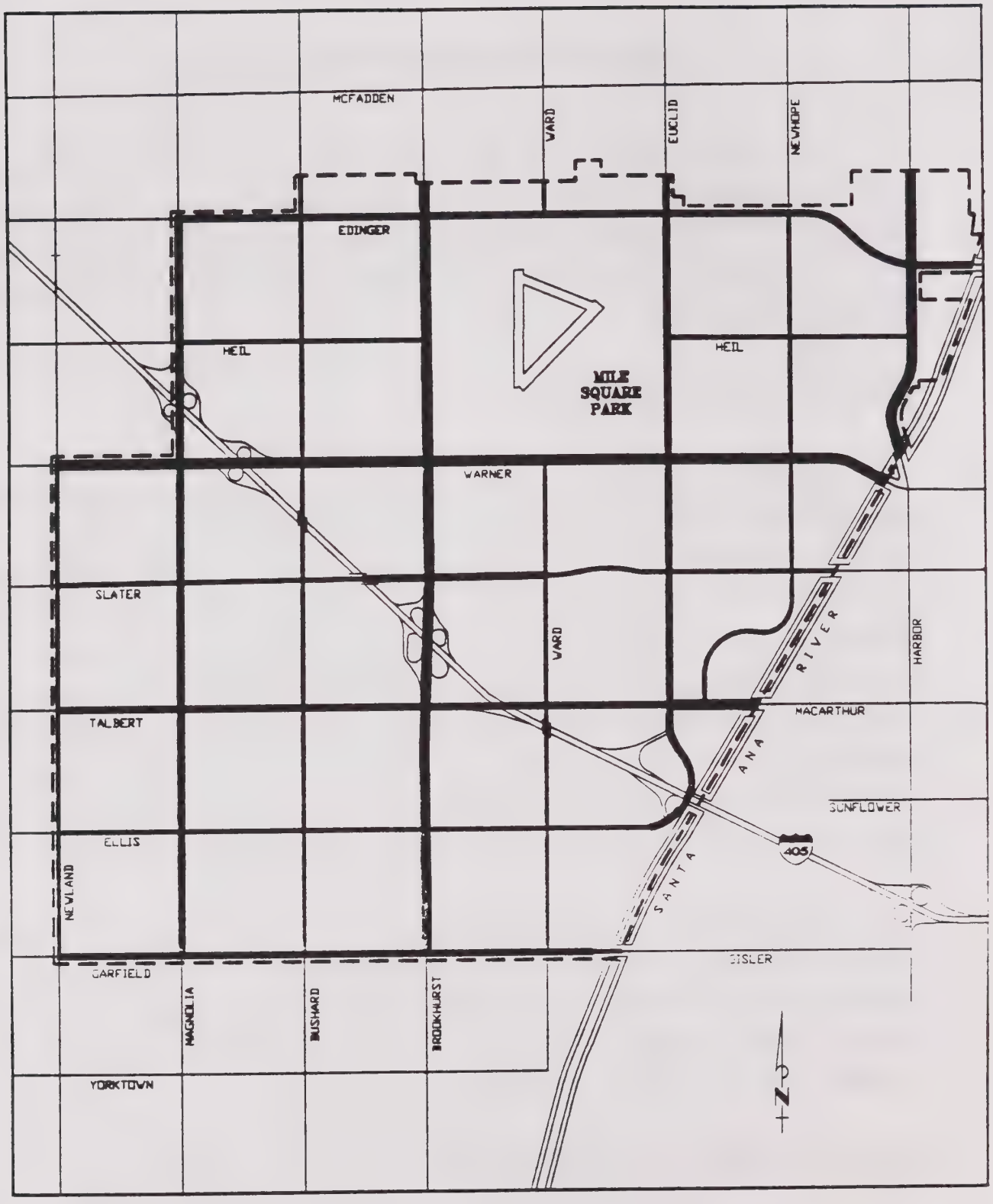
CURRENT CIRCULATION PLAN

The planned roadway system that is contained in the City's current Circulation Element of the General Plan is illustrated in Figure IV-1. Existing bridges planned for improvement include widening the Warner Avenue/I-405 overcrossing and the Talbert Avenue bridge over the Santa Ana River from four lanes to six lanes (three lanes in each direction), widening the Ward Street/I-405 overcrossing from two lanes to four lanes (two lanes in each direction), and the construction of a four lane (two lanes in each direction) Garfield Avenue bridge over the Santa Ana River connecting with Gisler Avenue in the city of Costa Mesa. Other improvements to the arterial system include widening the segment of Talbert Avenue between Euclid Street and the Santa Ana River to six lanes (three lanes in each direction; currently westbound is three lanes and eastbound is two lanes) and widening Heil Avenue east of Euclid Street from two lanes to four lanes (two lanes in each direction).

A notable feature included in the County of Orange Master Plan of Arterial Highways (MPAH) but not show in this illustration is the potential extension of the SR-57 Freeway to the I-405 Freeway along the Santa Ana River and possibly further south to Pacific Coast Highway (PCH). Caltrans is currently examining the feasibility of various design aspects of this facility, such as interchange locations and tollway and/or transitway provision.

PROPOSED GENERAL TRAFFIC VOLUMES

Daily and peak hour projected levels of traffic on the current circulation plan due to the proposed General Plan land uses were estimated using the traffic forecasting model, and the resulting



LEGEND

- Freeway
- Major Arterial (6 Lanes)
- Primary Arterial (4 Lanes)
- Secondary Arterial (4 Lanes)
- City Limit Boundary

Figure IV-1

CURRENT CIRCULATION PLAN

Post-2010 ADT forecasts are illustrated in Figure IV-2. The most significant volume increases compared with existing conditions are forecasted for the following roadways:

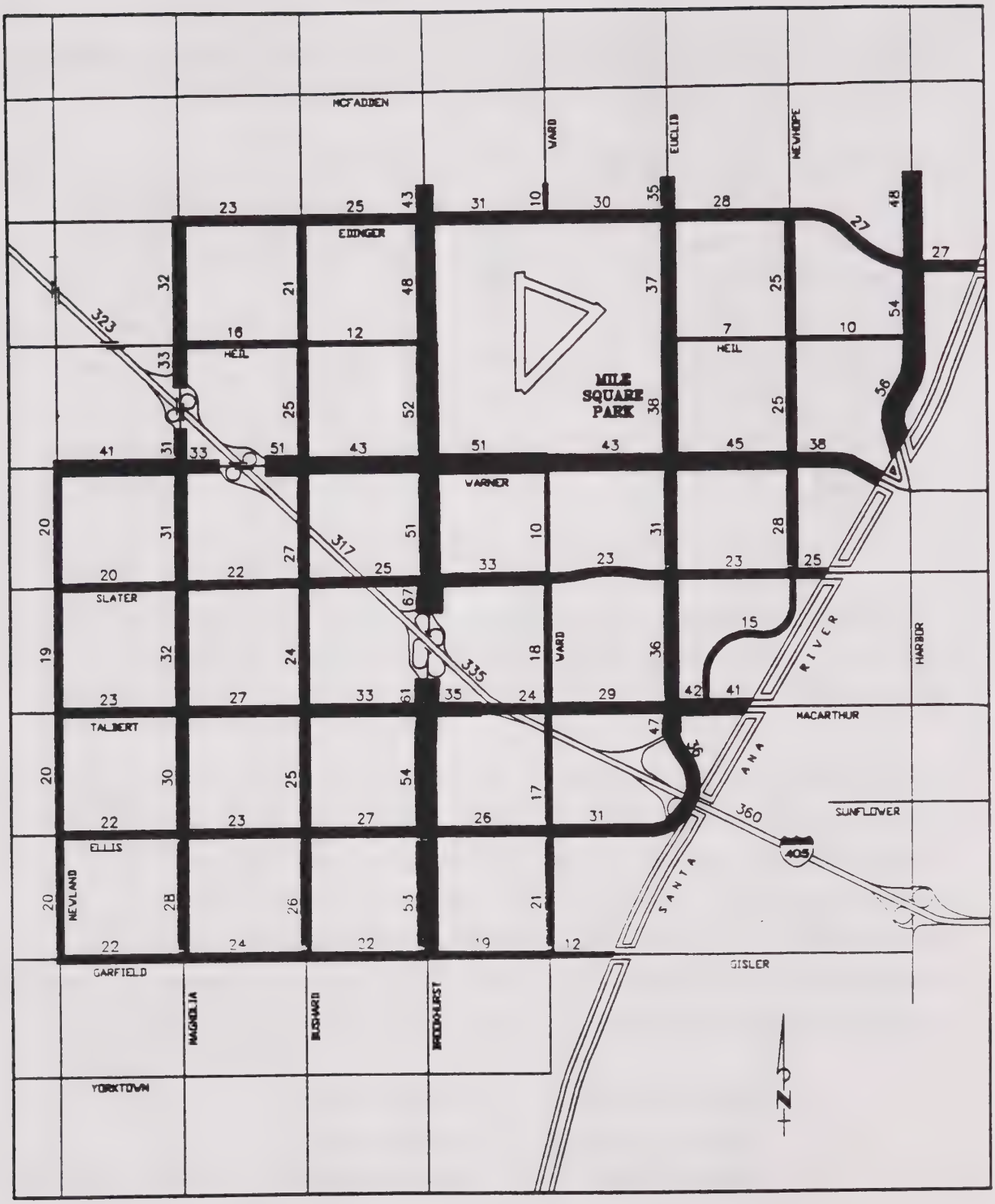
LOCATION	EXISTING ADT	POST-2010 ADT	INCREASE OVER EXISTING ADT
Euclid south of Talbert	31,000	47,000	16,000
Talbert east of Euclid	27,000	42,000	15,000
Warner from I-405 Freeway to the Santa Ana River	27,000-34,000	38,000-51,000	11,000-17,000
Brookhurst from I-405 Freeway to Edinger	39,000-56,000	48,000-67,000	9,000-11,000
Edinger from Brookhurst to Harbor	18,000-22,000	27,000-31,000	9,000-10,000
Garfield from Brookhurst to the Santa Ana River	9,000	12,000-19,000	10,000-12,000

Moderate ADT increases are also noted on Bushard Street throughout the city limits, Euclid Street north of Talbert Avenue, Slater Avenue east of Brookhurst Street, and Talbert Avenue from Brookhurst Street to Euclid Street.

In order to estimate Post-2010 peak hour levels of service for the intersections studied, a number of intersection improvements above the existing geometrics were assumed to be in place. These improvements, which are listed in Table IV-1, either are currently planned or are achievable within the roadway designations shown on the current circulation plan. The Post-2010 peak hour ICU values based on the proposed land plan and these current circulation plan improvements are listed in Table IV-2, together with existing ICUs for comparison. As the table indicates, the following intersections are projected to operate worse than the City's LOS "D" performance standard:

Bushard & Warner	Euclid & Warner
Brookhurst & Warner	Euclid & Slater
Brookhurst & Ellis	Euclid & Talbert
Euclid & Edinger	I-405 SB Ramps & Euclid/Ellis

Recommended circulation plan modifications for addressing these identified deficiencies are presented in the next chapter.



Notes: 1) ADT – Average Daily Traffic
2) Band width scale: 1/8 inch=50,000 ADT
3) Volumes shown only for arterials within the city of Fountain Valley

Figure IV–2

POST–2010 ADT VOLUMES (000'S) – CURRENT CIRCULATION PLAN

Table IV-1

CURRENT CIRCULATION PLAN INTERSECTION IMPROVEMENTS

	LOCATION	IMPROVEMENTS
10.	Magnolia & Warner	Add 3rd NBT, 3rd SBT, 2nd NBL, 2nd SBL, 2nd EBL and 2nd WBL
17.	Bushard & Warner	Add 2nd EBL
18.	Bushard & Slater	Add EBR and WBR
22.	Brookhurst & Edinger	Add 2nd EBL and 2nd WBL
24.	Brookhurst & Warner	Add 2nd NBL, 2nd SBL, 2nd EBL and 2nd WBL
25.	Brookhurst & Slater	Add WBR and 2nd SBL
26.	Brookhurst & Talbert	Add 2nd NBL
27.	Brookhurst & Ellis	Add WBR
29.	Ward & Edinger	Convert shared SBL/SBT to SBL and add 2nd SBT
30.	Ward & Warner	Add 2nd NBL
31.	Ward & Slater	Add EBR
32.	Ward & Talbert	Convert SBR to shared SBR/2nd SBT and add NBR
33.	Ward & Ellis	Add SBR
35.	Euclid & Edinger	Add 2nd NBL and 2nd SBL
36.	Euclid & Heil	Convert shared WBL/WBR to WBL and add WBR
37.	Euclid & Warner	Add 2nd NBL and 2nd SBL
38.	Euclid & Slater	Add EBR and WBR
39.	Euclid & Talbert	Add 3rd NBT, 3rd SBT and 2nd NBR
40.	Euclid & I-405 NB Ramps	Add 3rd SBT, 2nd NBL and shared EBL/EBR
41.	I-405 SB Ramps & Euclid/Ellis	Add 2nd SBL, convert EBT to 2nd EBL, convert EBR to shared EBR/2nd EBT and convert free WBR to standard WBR
42.	Newhope & Edinger	Add NBR
44.	Newhope & Warner	Add NBR, 2nd EBL and 2nd WBL
45.	Newhope & Slater	Add WBR and 2nd SBL
46.	Newhope & Talbert	Add 3rd EBT and 2nd EBL, convert shared SBT/2nd SBL to 2nd SBL and convert 2nd SBR to shared SBT/2nd SBR
48.	Harbor & Heil	Convert shared EBL/EBR to EBL and add EBR

Note: NBL = northbound left-turn lane, NBT = northbound thru lane, NBR = northbound right-turn lane, etc. for eastbound, southbound, and westbound.

Table IV-2

POST-2010 ICU SUMMARY - CURRENT CIRCULATION PLAN

INTERSECTION	EXISTING AM	EXISTING PM	POST-2010 CURRENT CIRCULATION PLAN AM	POST-2010 CURRENT CIRCULATION PLAN PM
3. Newland & Talbert	.54	.66	.67	.89
8. Magnolia & I-405 NB Ramps	.41	.81	.53	.84
9. Magnolia & I-405 SB Ramps	.50	.78	.56	.84
10. Magnolia & Warner	.84	.94*	.72	.73
11. Magnolia & Slater	.86	.80	.90	.85
12. Magnolia & Talbert	.72	.81	.83	.87
13. Magnolia & Ellis	.72	.76	.78	.89
15. Bushard & Edinger	.55	.65	.75	.84
16. Bushard & Heil	.37	.49	.67	.70
17. Bushard & Warner	.82	.90	1.05*	1.06*
18. Bushard & Slater	.85	.88	.80	.90
19. Bushard & Talbert	.67	.77	.76	.89
20. Bushard & Ellis	.74	.76	.81	.90
22. Brookhurst & Edinger	.66	.74	.80	.90
23. Brookhurst & Heil	.41	.55	.69	.68
24. Brookhurst & Warner	.66	.84	.79	1.05*
25. Brookhurst & Slater	.72	.79	.77	.88
26. Brookhurst & Talbert	.73	.81	.90	.82
27. Brookhurst & Ellis	.83	.90	.93*	1.01*
29. Ward & Edinger	.46	.48	.67	.57
30. Ward & Warner	.63	.59	.84	.85
31. Ward & Slater	.68	.69	.81	.86
32. Ward & Talbert	.68	.79	.89	.90
33. Ward & Ellis	.87	.73	.88	.82
35. Euclid & Edinger	.79	.77	.84	.95*
36. Euclid & Heil	.65	.70	.66	.79
37. Euclid & Warner	.76	.85	.92*	1.00*
38. Euclid & Slater	.89	.85	.96*	.92*
39. Euclid & Talbert	.84	.75	1.04*	.97*
40. Euclid & I-405 NB Ramps	.90	1.13*	.87	.34
41. I-405 SB Ramps & Euclid/Ellis	.77	1.01*	.81	.91*
42. Newhope & Edinger	.60	.77	.77	.88
43. Newhope & Heil	.43	.55	.57	.65
44. Newhope & Warner	.68	.80	.75	.89
45. Newhope & Slater	.87	.85	.86	.84
46. Newhope & Talbert	.73	.63	.65	.83
47. Harbor & Edinger	.51	.59	.65	.70
48. Harbor & Heil	.59	.56	.72	.85

Level of Service Ranges:
.00 - .60 A
.61 - .70 B
.71 - .80 C
.81 - .90 D
.91 - 1.00 E
Above 1.00 F

*Exceeds level of service "D"

V. MITIGATION MEASURES

This chapter discusses recommended modifications to the current Fountain Valley General Plan circulation plan. The modifications were developed to mitigate capacity deficiencies associated with the proposed General Plan land use plan as analyzed in the previous chapter. The proposed circulation plan for updating the City's Circulation Element is presented and discussed first, followed by summaries of the projected ADT volumes and peak hour levels of service on the proposed circulation plan assuming buildout of the proposed General Plan land uses.

PROPOSED CIRCULATION PLAN

The recommendations outlined here for modifying the City's circulation plan are separated into the following three categories:

1. Roadway Additions
2. Roadway Augmentations
3. Intersection Enhancements

Each of these three categories is discussed below.

Roadway Additions

Only one additional roadway is recommended for addition to the City's current circulation plan: an extension of Newhope Street as a secondary arterial from its existing southern termination at Talbert Avenue to Euclid Street. This connection is needed to alleviate the poor operating conditions forecasted at the intersection of Euclid Street and Talbert Avenue based on the current circulation plan.

Roadway Augmentations

The traditional approach to providing additional capacity on an arterial system is to upgrade individual arterials to a higher facility type by adding lanes. Typical examples would be upgrading a

four-lane primary to a six-lane major, or a two-lane commuter to a four-lane secondary. The implication is that additional capacity should be provided by additional thru lanes along the length of the arterial.

– The concept of augmented capacity addresses the fact that intersection capacity is generally more important than midblock lane capacity in determining how well the transportation "system" performs. It focuses on sections of arterial where the link capacity is deficient and provides additional capacity without major changes to the facility as a whole. It may not require additional right-of-way, although some widening may be necessary, particularly if additional thru lanes are required.

It is recommended that this augmented capacity concept be added to the General Plan designations as a qualifier which designates potential augmentation of specified primary arterials to six-lane roadways. It can then provide a discretionary ability for the City to determine suitable improvement plans to augment the basic capacity at individual locations. It essentially recognizes that individual locations have different traffic characteristics and therefore, need to be addressed individually. By using the augmented primary arterial designation, the General Plan has a means of showing where such improvements might be needed in the future, and providing the flexibility for determining the most effective improvements on location by location basis.

The two roadways recommended for this augmented primary arterial designation are:

- Euclid Street from the northern city limits to Newhope Street
- Talbert Avenue from Euclid Street to the Santa Ana River

Both of these facilities are currently shown as primary arterials on the County's Master Plan of Arterial Highways (MPAH), however Euclid Street north of the city limits and MacArthur Boulevard (Talbert Avenue) east of the Santa Ana River are designated as modified major arterials (essentially the same as the City's augmented primary designation) on the County MPAH. Therefore, the City's augmented primary designation of these two facilities are logical extensions of the County's MPAH designations.

Intersection Enhancements

For intersections which are projected to require more lanes than allowed within the typical arterial cross-section as designated on the proposed circulation plan, it is recommended that an "enhanced" intersection designation be included on the circulation plan. At such locations, the provision of additional lanes may require additional right-of-way beyond the standard provided within the typical cross-sections. Alternatively, these additional lanes could be accommodated by removing on-street bike lanes or reducing parkway width.

Based on the Post-2010 traffic forecasts and on actual constructed intersection geometrics, it is recommended that the following six locations be designated as enhanced intersections:

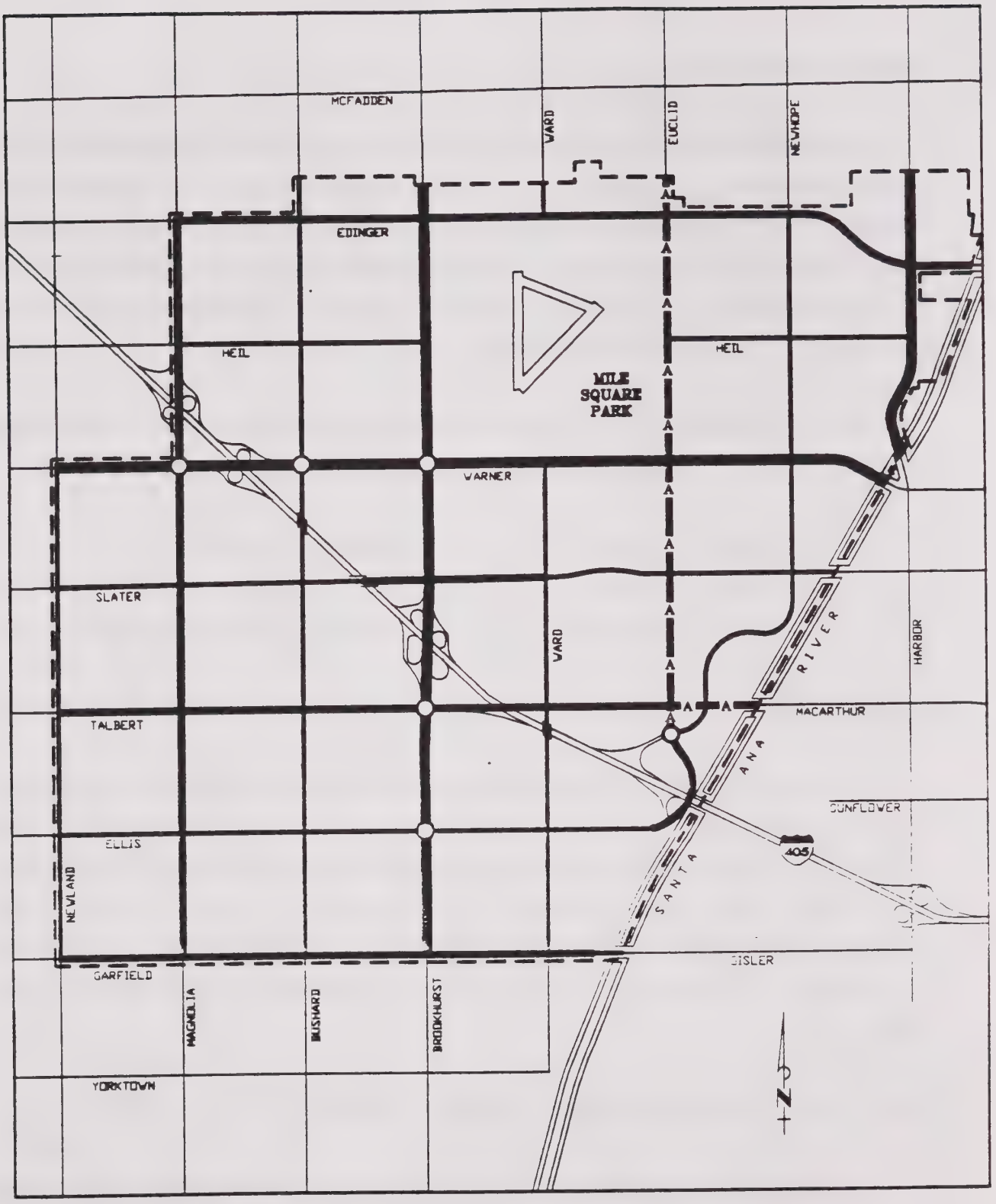
Magnolia & Warner	Brookhurst & Talbert
Bushard & Warner	Brookhurst & Ellis
Brookhurst & Warner	Euclid & I-405 NB Ramps/Newhope

Circulation Plan

The proposed General Plan circulation system is illustrated in Figure V-1, and Table V-1 contains a comprehensive list of all modifications to the City's existing roadway system as depicted in either the current or proposed circulation plan. Modifications listed for the proposed circulation plan (other than intersection improvements) can be considered the mitigation measures needed to adequately serve the proposed General Plan land use plan. The intersection improvements listed on the table are to be used as a guideline for intersection design as the circulation plan is implemented.

PROPOSED CIRCULATION PLAN TRAFFIC VOLUMES

The traffic forecasting model was utilized to prepare traffic projections based on the proposed General Plan land use and circulation plans. Figure V-2 illustrates the resulting Post-2010 ADT volumes. As the figure indicates, the Newhope Street extension, which is estimated to carry 24,000 ADT, significantly reduces the current circulation plan forecasts presented earlier for Euclid Street



LEGEND

- Freeway
- Major Arterial (6 Lanes)
- A — Augmented Primary Arterial (6 lanes)
- Primary Arterial (4 Lanes)
- Secondary Arterial (4 Lanes)
- Enhanced Intersection
- City Limit Boundary

Figure V-1

PROPOSED CIRCULATION PLAN

Table V-1

CIRCULATION SYSTEM MODIFICATIONS

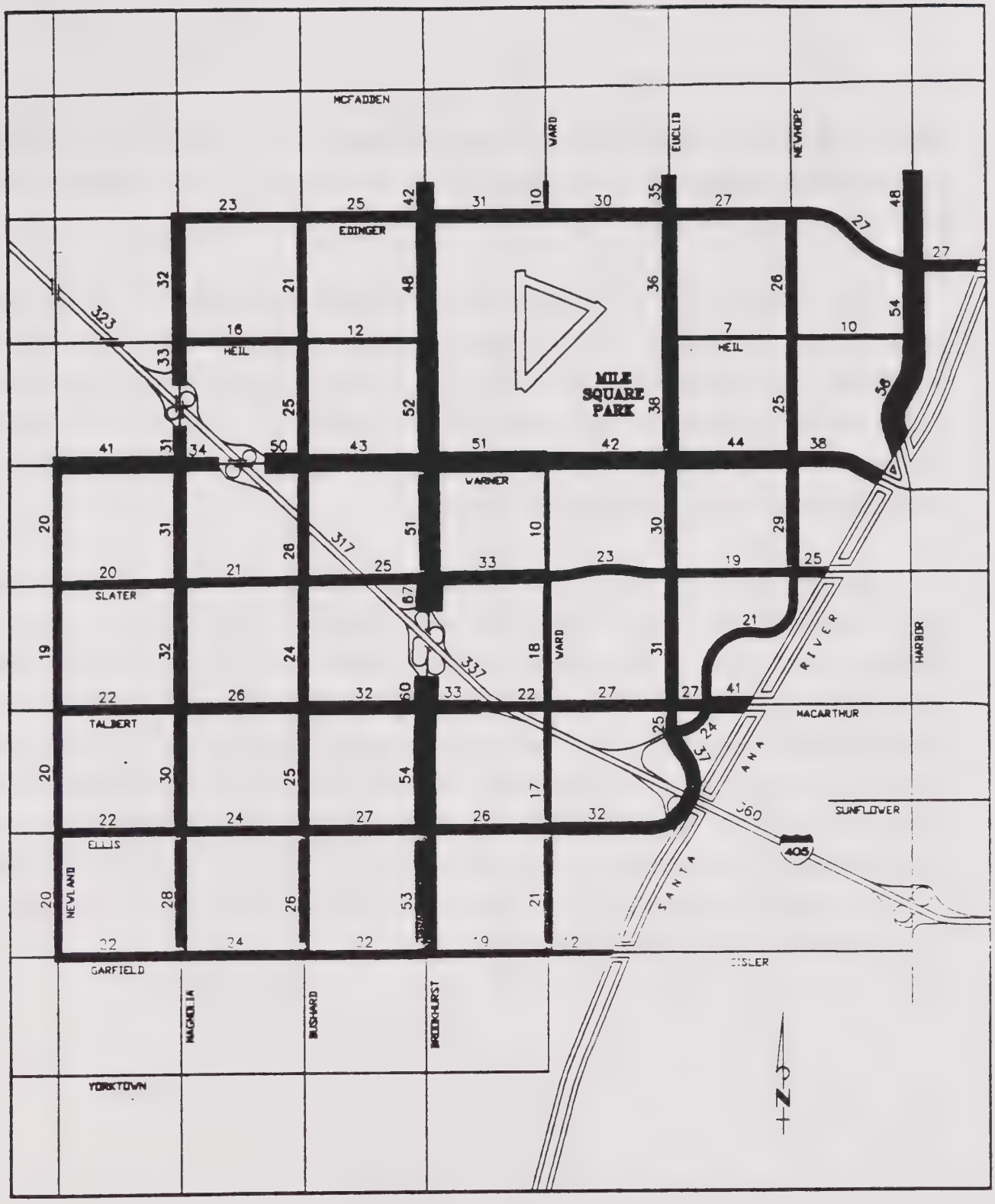
LOCATION	CURRENT CIRCULATION PLAN	PROPOSED CIRCULATION PLAN
ARTERIAL IMPROVEMENTS		
Euclid (northern city limits to Newhope)		Widen to 6 lanes (see reclassification below)
Garfield (@ Santa Ana River)	Construct 4-lane secondary arterial bridge	
Heil (Euclid to 1/4 mile east of Euclid)	Widen to 4-lane secondary arterial	
Newhope (Talbert to Euclid)		Construct four lane secondary arterial connection
Talbert (Euclid to eastern city limits)	Widen to 6 lanes (see reclassification below)	
Ward (@ I-405 Freeway)	Widen bridge to 4-lane secondary arterial	
Warner (@ I-405 Freeway)	Widen bridge to 6-lane major arterial	
ARTERIAL RECLASSIFICATION		
Euclid (northern city limits to Newhope)		Reclassify as 6-lane augmented primary arterial
Talbert (Euclid to eastern city limits)		Reclassify as 6-lane augmented primary arterial
INTERSECTION IMPROVEMENTS		
10. Magnolia & Warner	Add 3rd NBT, 3rd SBT, 2nd NBL, 2nd SBL, 2nd EBL and 2nd WBL	
17. Bushard & Warner	Add 2nd EBL	Add 2nd NBL, 2nd SBL, 4th EBT and WBR
18. Bushard & Slater	Add EBR and WBR	
22. Brookhurst & Edinger	Add 2nd EBL and 2nd WBL	
24. Brookhurst & Warner	Add 2nd NBL, 2nd SBL, 2nd EBL and 2nd WBL	Add 4th NBT, 4th SBT and 2nd WBR
25. Brookhurst & Slater	Add WBR and 2nd SBL	
26. Brookhurst & Talbert	Add 2nd NBL	
27. Brookhurst & Ellis	Add WBR	Add 2nd EBL and 2nd WBL

(Continued)

Table V-1 (cont)
CIRCULATION SYSTEM MODIFICATIONS

LOCATION	CURRENT CIRCULATION PLAN	PROPOSED CIRCULATION PLAN
INTERSECTION IMPROVEMENTS (cont)		
29. Ward & Edinger	Convert shared SBL/SBT to SBL and add 2nd SBT	
30. Ward & Warner	Add 2nd NBL	
31. Ward & Slater	Add EBR	
32. Ward & Talbert	Convert SBR to shared SBR/ 2nd SBT and add NBR	
33. Ward & Ellis	Add SBR	
35. Euclid & Edinger	Add 2nd NBL and 2nd SBL	Add 3rd SBT and convert NBR to shared 3rd NBT/NBR
36. Euclid & Heil	Convert shared WBL/WBR to WBL and add WBR	Add 3rd NBT and 3rd SBT
37. Euclid & Warner	Add 2nd NBL and 2nd SBL	Add 3rd NBT and 3rd SBT
38. Euclid & Slater	Add EBR and WBR	Add 3rd NBT and 3rd SBT
39. Euclid & Talbert	Add 3rd NBT, 3rd SBT and 2nd NBR	Retain single NBR
40. Euclid & I-405 NB Ramps	Add 3rd SBT, 2nd NBL and shared EBL/EBR	Modify for future east leg of intersection (Newhope extension)
41. I-405 SB Ramps & Euclid/Ellis	Add 2nd SBL, convert EBT to 2nd EBL, convert EBR to shared EBR/ 2nd EBT and convert free WBR to standard WBR	
42. Newhope & Edinger	Add NBR	
44. Newhope & Warner	Add NBR, 2nd EBL and 2nd WBL	
45. Newhope & Slater	Add WBR and 2nd SBL	
46. Newhope & Talbert	Add 3rd EBT and 2nd EBL, convert shared SBT/2nd SBL to 2nd SBL and convert 2nd SBR to shared SBT/2nd SBR	Modify for future south leg of intersection (Newhope extension)
48. Harbor & Heil	Convert shared EBL/EBR to EBL and add EBR	

Note: NBL = northbound left-turn lane, NBT = northbound thru lane, NBR = northbound right-turn lane, etc. for eastbound, southbound, and westbound.



Notes: 1) ADT – Average Daily Traffic
2) Band width scale: 1/8 inch=50,000 ADT
3) Volumes shown only for arterials within the city of Fountain Valley

Figure V-2

POST-2010 ADT VOLUMES (000'S) – PROPOSED CIRCULATION PLAN

south of Talbert Avenue and Talbert Avenue east of Euclid Street. Aside from these localized impacts in the immediate vicinity of the Newhope Street extension, the forecasted volumes are very similar between the current and proposed circulation plans.

– The peak hour ICUs for Post-2010 intersection volume forecasts based on the proposed circulation plan are listed in Table V-2 together with the current circulation plan ICUs for comparison. The proposed circulation plan ICUs are also summarized graphically in Figures V-3 and V-4 for the AM and PM peak hours, respectively. As the summaries indicate, each intersection location studied is projected to operate within the City's LOS "D" performance standard with implementation of the proposed circulation plan.

Post-2010 peak hour I-405 Freeway interchange ramp volumes and volume/capacity ratios based on the proposed General Plan land plan and circulation plan are presented in Figure V-5. Reflected on the diagram are the planned improvements identified for the Euclid Street interchange in the I-405 Freeway Access Study (reference 7 in Chapter I). The improvements involve widening both the northbound off-ramp and the southbound on-ramp to two-lane ramps. As the illustration indicate, each interchange ramp is projected to operate at LOS "D" or better under Post-2010 proposed General Plan conditions. However, as noted earlier with respect to existing conditions at the interchanges, some locations may experience lower levels of service than implied by these theoretical values due to factors such as ramp metering, close intersection proximity, unsignalized intersections, and/or limited turn pocket or weaving lengths.

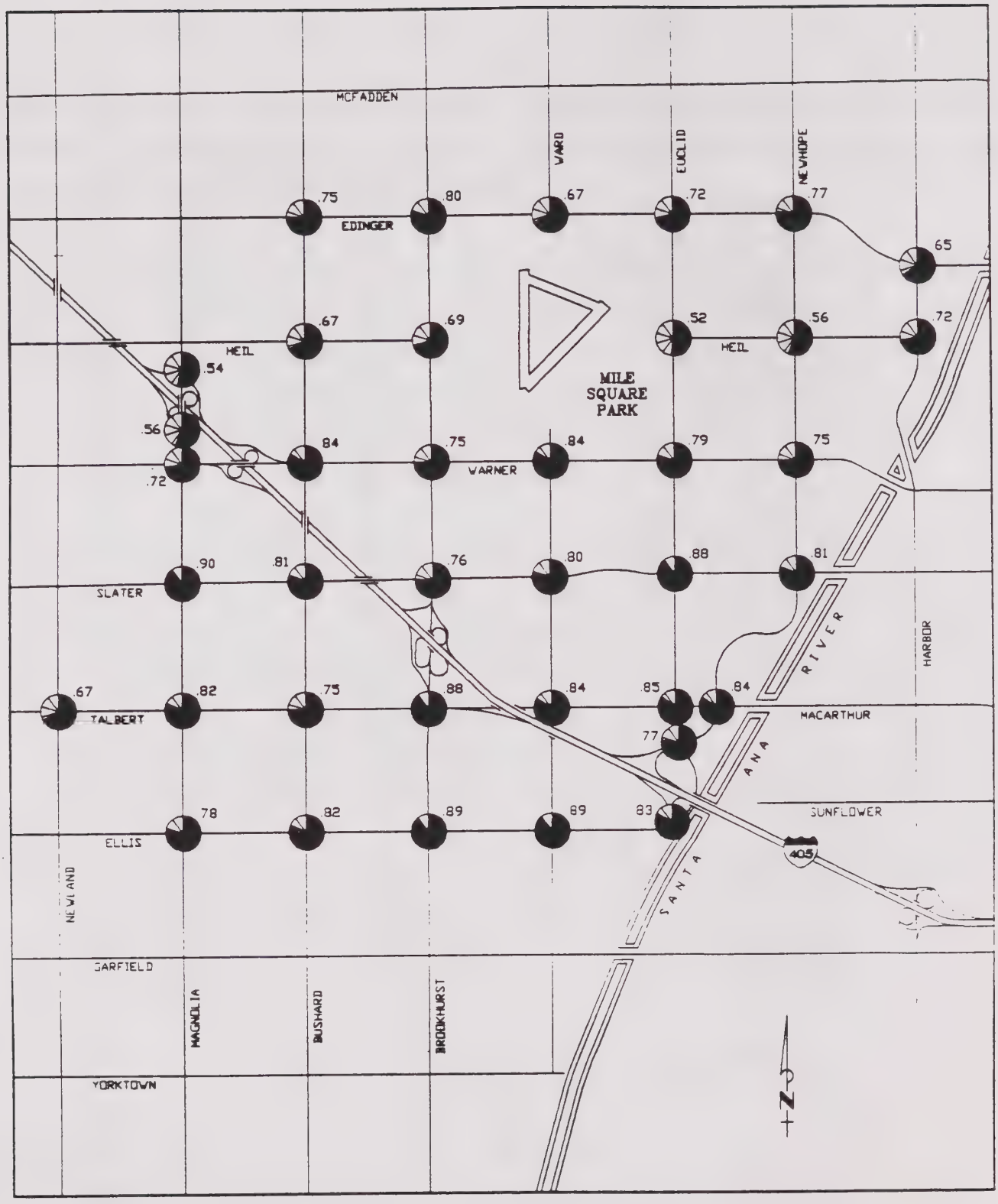
Table V-2

POST-2010 ICU SUMMARY - PROPOSED CIRCULATION PLAN

INTERSECTION	CURRENT CIRCULATION PLAN AM	CURRENT CIRCULATION PLAN PM	PROPOSED CIRCULATION PLAN AM	PROPOSED CIRCULATION PLAN PM
3. Newland & Talbert	.67	.89	.67	.90
8. Magnolia & I-405 NB Ramps	.53	.84	.54	.83
9. Magnolia & I-405 SB Ramps	.56	.84	.56	.84
10. Magnolia & Warner	.72	.73	.72	.74
11. Magnolia & Slater	.90	.85	.90	.84
12. Magnolia & Talbert	.83	.87	.82	.87
13. Magnolia & Ellis	.78	.89	.78	.88
15. Bushard & Edinger	.75	.84	.75	.84
16. Bushard & Heil	.67	.70	.67	.71
17. Bushard & Warner	1.05*	1.06*	.84	.89
18. Bushard & Slater	.80	.90	.81	.90
19. Bushard & Talbert	.76	.89	.75	.89
20. Bushard & Ellis	.81	.90	.82	.90
22. Brookhurst & Edinger	.80	.90	.80	.90
23. Brookhurst & Heil	.69	.68	.69	.68
24. Brookhurst & Warner	.79	1.05*	.75	.87
25. Brookhurst & Slater	.77	.88	.76	.89
26. Brookhurst & Talbert	.90	.82	.88	.83
27. Brookhurst & Ellis	.93*	1.01*	.89	.90
29. Ward & Edinger	.67	.57	.67	.58
30. Ward & Warner	.84	.85	.84	.84
31. Ward & Slater	.81	.86	.80	.89
32. Ward & Talbert	.89	.90	.84	.86
33. Ward & Ellis	.88	.82	.89	.80
35. Euclid & Edinger	.84	.95*	.72	.83
36. Euclid & Heil	.66	.79	.52	.63
37. Euclid & Warner	.92*	1.00*	.79	.87
38. Euclid & Slater	.96*	.92*	.88	.85
39. Euclid & Talbert	1.04*	.97*	.85	.81
40. Euclid & I-405 NB Ramps	.87	.84	.77	.87
41. I-405 SB Ramps & Euclid/Ellis	.81	.91*	.83	.90
42. Newhope & Edinger	.77	.88	.77	.89
43. Newhope & Heil	.57	.65	.56	.67
44. Newhope & Warner	.75	.89	.75	.87
45. Newhope & Slater	.86	.84	.81	.84
46. Newhope & Talbert	.65	.83	.84	.86
47. Harbor & Edinger	.65	.70	.65	.70
48. Harbor & Heil	.72	.85	.72	.85

Level of Service Ranges:
.00 - .60 A
.61 - .70 B
.71 - .80 C
.81 - .90 D
.91 - 1.00 E
Above 1.00 F

*Exceeds level of service "D"

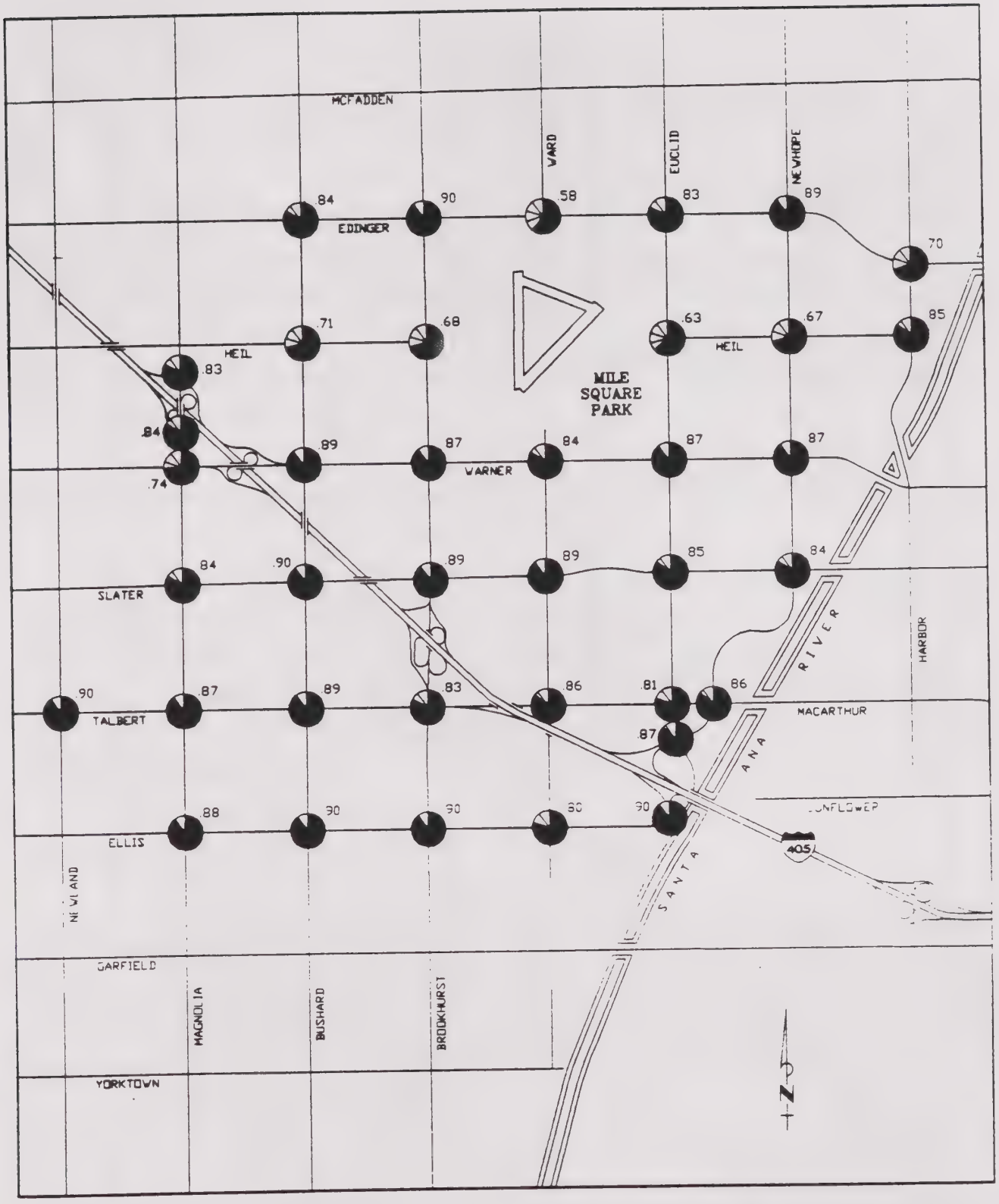


Level of service (LOS) ranges:

LOS A .00–.60	LOS D .81–.90
LOS B .61–.70	LOS E .91–1.00
LOS C .71–.80	LOS F Above 1.00

Figure V–3

POST–2010 AM PEAK HOUR ICU'S – PROPOSED CIRCULATION PLAN

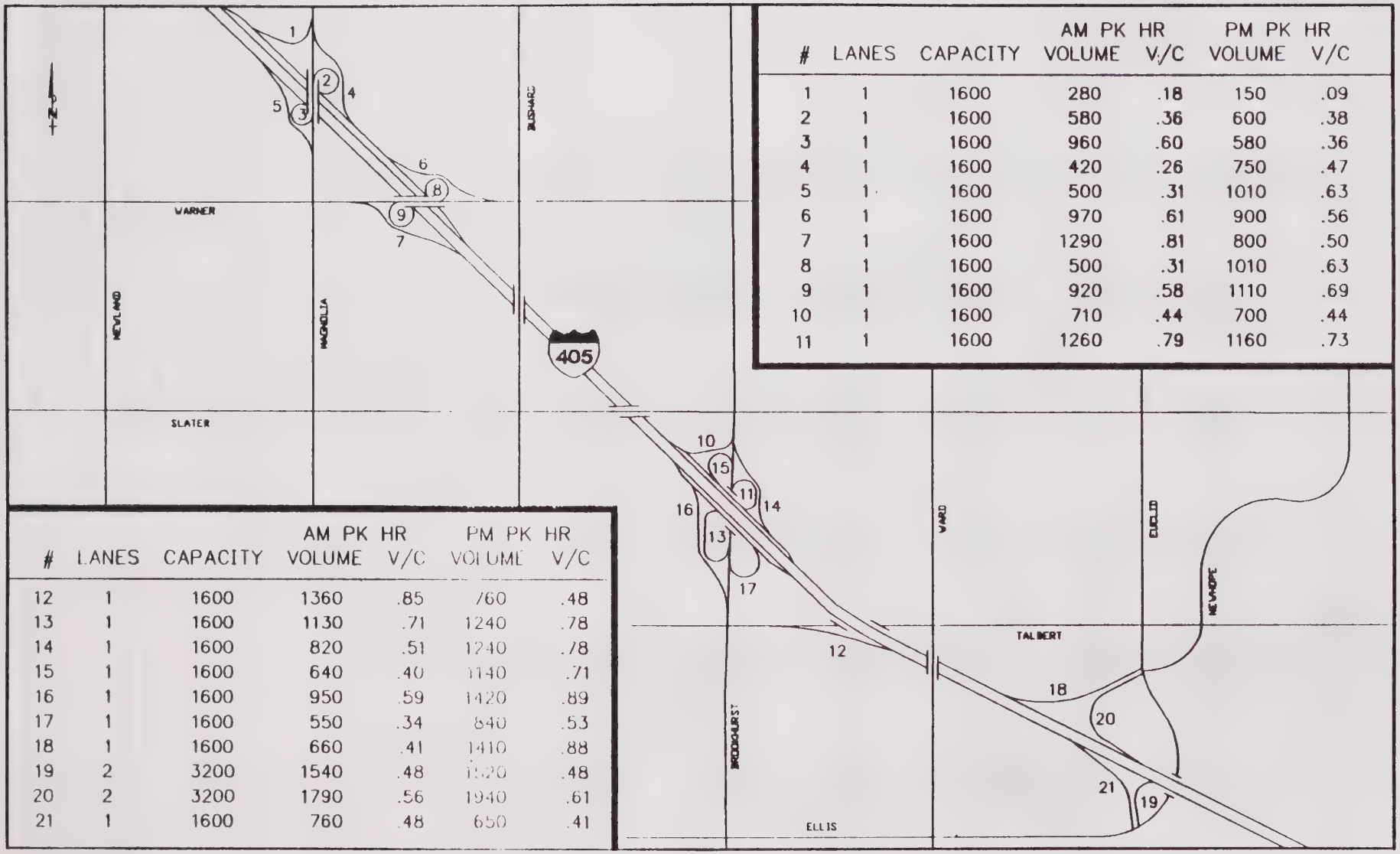


Level of service (LOS) ranges:

LOS A .00–.60	LOS D .81–.90
LOS B .61–.70	LOS E .91–1.00
LOS C .71–.80	LOS F Above 1.00

Figure V–4

POST–2010 PM PEAK HOUR ICU'S – PROPOSED CIRCULATION PLAN



#	LANES	CAPACITY	AM PK HR VOLUME	AM PK HR V/C	PM PK HR VOLUME	PM PK HR V/C
1	1	1600	280	.18	150	.09
2	1	1600	580	.36	600	.38
3	1	1600	960	.60	580	.36
4	1	1600	420	.26	750	.47
5	1	1600	500	.31	1010	.63
6	1	1600	970	.61	900	.56
7	1	1600	1290	.81	800	.50
8	1	1600	500	.31	1010	.63
9	1	1600	920	.58	1110	.69
10	1	1600	710	.44	700	.44
11	1	1600	1260	.79	1160	.73
12	1	1600	1360	.85	760	.48
13	1	1600	1130	.71	1240	.78
14	1	1600	820	.51	1240	.78
15	1	1600	640	.40	1140	.71
16	1	1600	950	.59	1420	.89
17	1	1600	550	.34	840	.53
18	1	1600	660	.41	1410	.88
19	2	3200	1540	.48	1520	.48
20	2	3200	1790	.56	1940	.61
21	1	1600	760	.48	650	.41

Level of service (LOS) ranges:

LOS A .00-.60	LOS D .81-.90
LOS B .61-.70	LOS E .91-1.00
LOS C .71-.80	LOS F Above 1.00

Figure V-5
POST-2010 PEAK HOUR
FREEWAY RAMP VOLUMES
- PROPOSED CIRCULATION PLAN

APPENDIX A
LAND USE AND TRIP GENERATION

This appendix describes the development of trip generation rates, a land use database, and trip generation estimates for use in the Fountain Valley Traffic Model (FVTM). Trip rate sources are documented first, followed by a description of the land use database and then a detailed discussion of the peak hour and peak period relationships used in the traffic model. Zonal land use and trip generation estimates produced for the FVTM analysis area are listed at the end of these technical notes.

TRIP GENERATION RATES

Trip generation rates used for analyzing development in the FVTM have been compiled primarily from the Institute of Transportation Engineers' (ITE) "Trip Generation" (Fifth Edition). Table A-1 summarizes the purpose splitting factors used to generate productions and attractions by trip purpose, and Table A-2 summarizes the peak hour and average daily traffic (ADT) trip generation rates. The following discusses the derivation of the peak hour and ADT trip generation rates for each land use category.

1. Low Residential

ADT and peak hour trip generation rates were derived from the ITE rates for single family detached housing. ITE's ADT rate of 9.55 trips per dwelling unit (DU) was adjusted to 10.00 based on higher than average trip generation characteristic of single-family detached residential developments in the Fountain Valley community. Peak hour relationships were derived from the ITE peak hour of generator rates for single family detached housing and applied to the ADT rate. AM peak hour inbound (IB) and outbound (OB) rates are .23 and .68, respectively, and PM peak hour IB and OB rates are .77 and .45, respectively.

2. Low/Medium Residential

ADT trip generation rate of 8.82 trips per DU and the corresponding peak hour of generator trip rates were derived as a composite rate comprised of 67 percent (two-thirds) of the FVTM rates for single family detached housing (land use category #1) and 33 percent (one-third) of the FVTM rates for apartments (land use category #4). AM peak hour IB and OB rates are .22 and .59, respectively, and PM peak hour IB and OB rates are .65 and .40, respectively.

Table A-1

FVTM PRODUCTION/ATTRACTION TRIP GENERATION FACTORS

Land Use Type	Units	ADT Tripend Rate	Splitting Factors: Productions HBW	HBNW	NHB	Total	Attractions HBW	HBNW	NHB	Total	P&A Total
1. Low Residential	DU	10.00	.22	.38	.13	.73	.00	.14	.13	.27	1.00
2. Low/Medium Residential	DU	8.82	.21	.45	.11	.77	.00	.12	.11	.23	1.00
3. Medium Residential	DU	7.65	.21	.49	.10	.80	.00	.10	.10	.20	1.00
4. High Residential	DU	6.47	.20	.56	.08	.84	.00	.08	.08	.16	1.00
5. Local Commercial	TSF	81.10	.00	.00	.22	.22	.06	.50	.22	.78	1.00
6. General Commercial	TSF	29.40	.00	.00	.23	.23	.18	.36	.23	.77	1.00
7. Office Commercial	TSF	15.33	.00	.00	.30	.30	.32	.08	.30	.70	1.00
8. Commercial Manufacturing	TSF	6.97	.00	.00	.26	.26	.48	.00	.26	.74	1.00
9. Manufacturing	TSF	3.85	.00	.00	.26	.26	.48	.00	.26	.74	1.00
10. Warehouse/Storage	TSF	3.75	.00	.00	.26	.26	.48	.00	.26	.74	1.00
11. Elementary/Middle School	STU	1.50	.00	.00	.00	.00	.10	.90	.00	1.00	1.00
12. High School	STU	1.80	.00	.00	.00	.00	.04	.96	.00	1.00	1.00
13. Government Office	TSF	47.00	.00	.00	.26	.26	.19	.29	.26	.74	1.00
14. Hotel	ROOM	9.45	.00	.00	.17	.17	.20	.46	.17	.83	1.00
15. Hospital	TSF	16.78	.00	.00	.05	.05	.32	.58	.05	.95	1.00
16. Church	TSF	9.32	.00	.00	.05	.05	.30	.60	.05	.95	1.00
17. Recreation Center	TSF	20.50	.00	.00	.27	.27	.08	.38	.27	.73	1.00
18. Golf Course	ACRE	8.33	.00	.00	.27	.27	.08	.38	.27	.73	1.00
19. Park	ACRE	2.23	.00	.00	.12	.12	.00	.76	.12	.88	1.00
20. Agriculture	ACRE	.10	.00	.00	.17	.17	.33	.33	.17	.83	1.00
21. Vacant	ACRE	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22. SDU (OCTAM II)	DU	10.00	.22	.38	.13	.73	.00	.14	.13	.27	1.00
23. MDU (OCTAM II)	DU	8.00	.20	.56	.08	.84	.00	.08	.08	.16	1.00
24. Retail Emp. (OCTAM II)	EMP	20.00	.00	.00	.17	.17	.08	.58	.17	.83	1.00
25. Total Emp. (OCTAM II)	EMP	3.35	.00	.00	.23	.23	.43	.11	.23	.77	1.00

Note: HBW - Home-Based Work
HBNW - Home-Based Non-Work
NHB - Non-Home-Based

Table A-2

ADT AND PEAK HOUR TRIP RATE SUMMARY

Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
1. Low Residential	DU	.23	.68	.91	.77	.45	1.22	10.00
2. Low/Medium Residential	DU	.22	.59	.81	.65	.40	1.05	8.82
3. Medium Residential	DU	.21	.49	.70	.52	.35	.87	7.65
4. High Residential	DU	.20	.40	.60	.40	.30	.70	6.47
5. Local Commercial	TSF	1.19	.70	1.89	3.75	3.75	7.50	81.10
6. General Commercial	TSF	1.39	.31	1.70	1.16	1.97	3.13	29.40
7. Office Commercial	TSF	1.84	.23	2.07	.35	1.70	2.05	15.33
8. Commercial Manufacturing	TSF	.81	.11	.92	.17	.81	.98	6.97
9. Manufacturing	TSF	.62	.16	.78	.36	.39	.75	3.85
10. Warehouse/Storage	TSF	.27	.15	.42	.14	.30	.44	3.75
11. Elementary/Middle School	STU	.23	.15	.38	.19	.15	.34	1.50
12. High School	STU	.30	.10	.40	.10	.20	.30	1.80
13. Government Office	TSF	3.47	.60	4.07	1.88	5.07	6.95	47.00
14. Hotel	ROOM	.32	.37	.69	.43	.34	.77	9.45
15. Hospital	TSF	.83	.37	1.20	.48	.94	1.42	16.78
16. Church	TSF	.69	.69	1.38	.84	.58	1.42	9.32
17. Recreation Center	TSF	1.51	1.10	2.61	.90	1.41	2.31	20.50
18. Golf Course	ACRE	.22	.05	.27	.08	.31	.39	8.33
19. Park	ACRE	.00	.00	.00	.00	.00	.00	2.23
20. Agriculture	ACRE	.01	.00	.01	.00	.01	.01	.10
21. Vacant	ACRE	.00	.00	.00	.00	.00	.00	.00
22. SDU (OCTAM II)	DU	.20	.50	.70	.70	.40	1.10	10.00
23. MDU (OCTAM II)	DU	.20	.50	.70	.55	.35	.90	6.00
24. Retail Emp. (OCTAM II)	EMP	.30	.16	.46	.90	.90	1.80	20.00
25. Total Emp. (OCTAM II)	EMP	.28	.04	.32	.08	.04	.12	1.35

Note: Values listed here are basic peak hour trip rates and for many categories are not those used in the FVTM (see Table A-6 and related discussion in these technical notes).

3. Medium Residential

ADT trip generation rate of 7.65 trips per DU and the corresponding peak hour of generator trip rates were derived as a composite rate comprised of 33 percent (one-third) of the FVTM rates for single family detached housing (land use category #1) and 67 percent (two-thirds) of the FVTM rates for apartments (land use category #4). AM peak hour IB and OB rates are .21 and .49, respectively, and PM peak hour IB and OB rates are .52 and .35, respectively.

4. High Residential

ADT trip generation rate of 6.47 trips per DU and the corresponding peak hour of generator trip rates were taken from the ITE rates for apartments. AM peak hour IB and OB rates of .19 and .37 were rounded to .20 and .40, respectively, and PM peak hour IB and OB rates of .40 and .29 were rounded to .40 and .30, respectively.

5. Local Commercial

ADT trip generation rate of 81.10 trips per thousand square feet (TSF) and the corresponding peak hour trip rates were taken from the ITE rates for shopping centers (50 to 100 TSF). AM peak hour IB and OB rates are 1.19 and .70, respectively, and PM peak hour IB and OB rates are both 3.75.

6. General Commercial

ADT trip generation rate of 29.40 trips per TSF and the corresponding peak hour trip rates were derived as a composite rate comprised of 40 percent of the ITE rates for 50 to 500 TSF shopping centers (ADT rate of 50.50, AM IB and OB rates of .71 and .42, respectively, and PM IB and OB rate of 2.37) and 60 percent of the ITE rates for 50 to 100 TSF general office buildings (FVTM land use category #7). AM peak hour IB and OB rates are 1.39 and .31, respectively, and PM peak hour IB and OB rates are 1.16 and 1.97, respectively.

7. Office Commercial

ADT trip generation rate of 15.33 trips per TSF and the corresponding peak hour trip rates were taken from the ITE rates for general office buildings (50 to 100 TSF). AM peak hour IB and OB rates are 1.84 and .23, respectively, and PM peak hour IB and OB rates are .35 and 1.70, respectively.

8. Commercial Manufacturing

ADT trip generation rate of 6.97 trips per TSF and the corresponding peak hour of generator trip rates were derived by averaging the ITE rates for general light industrial buildings and industrial parks. AM peak hour IB and OB rates are .81 and .11, respectively, and PM peak hour IB and OB rates are .17 and .81, respectively.

9. Manufacturing

ADT trip generation rate of 3.85 trips per TSF and the corresponding peak hour of generator trip rates were taken from the ITE rates for manufacturing facilities. AM peak hour IB and OB rates are .62 and .16, respectively, and PM peak hour IB and OB rates are .36 and .39, respectively.

10. Warehouse/Storage

ADT trip generation rate of 3.75 trips per TSF and the corresponding peak hour of generator trip rates were derived by averaging the ITE rates for warehousing and mini-warehousing. AM peak hour IB and OB rates are .27 and .15, respectively, and PM peak hour IB and OB rates are .14 and .30, respectively.

11. Elementary/Middle School

ADT and peak hour trip generation rates were derived from the ITE rates for elementary schools. ITE's ADT rate of 1.09 trips per student was adjusted to 1.50 based on higher than average levels of automobile transported students characteristic of the Fountain Valley community. Peak hour relationships were derived from the ITE peak hour of generator rates for elementary schools and applied to the ADT rate. AM peak hour IB and OB rates are .23 and .15, respectively, and PM peak hour IB and OB rates are .19 and .15, respectively.

12. High School

ADT and peak hour trip generation rates were derived from the ITE rates for high schools. ITE's ADT rate of 1.38 trips per student was adjusted to 1.80 based on higher than average levels of automobile transported students characteristic of the Fountain Valley community. Peak hour relationships were derived from the ITE peak hour of generator rates for high schools and applied to the ADT rate. AM peak hour IB and OB rates are .30 and .10, respectively, and PM peak hour IB and OB rates are .10 and .20, respectively.

13. Government Office

ADT trip generation rate of 47.00 trips per TSF and the corresponding peak hour of generator trip rates were derived by averaging the ITE rates for government office buildings and government office complexes. AM peak hour IB and OB rates are 3.47 and .60, respectively, and PM peak hour IB and OB rates are 1.88 and 5.07, respectively.

14. Hotel

ADT trip generation rate of 9.45 trips per room and the corresponding peak hour of generator trip rates were derived by averaging the ITE rates for hotels and motels. AM peak hour IB and OB rates are .32 and .37, respectively, and PM peak hour IB and OB rates are .43 and .34, respectively.

15. Hospital

ADT trip generation rate of 16.78 trips per TSF and the corresponding peak hour of generator trip rates were taken from the ITE rates for hospitals. AM peak hour IB and OB rates

are .83 and .37, respectively, and PM peak hour IB and OB rates are .48 and .94, respectively.

16. Church

ADT trip generation rate of 9.32 trips per TSF and the corresponding peak hour of generator trip rates were taken from the ITE rates for church buildings. AM peak hour IB and OB rates are both .69, and PM peak hour IB and OB rates are .84 and .58, respectively.

17. Recreation Center

Peak hour of generator trip rates were taken from the ITE rates for recreational community centers. AM peak hour IB and OB rates per TSF are 1.51 and 1.10, respectively, and PM peak hour IB and OB rates per TSF are .90 and 1.41, respectively. ADT trip generation rate of 20.50 trips per TSF was derived by comparing the FVTM peak hour rates for this category with the ITE peak hour of generator rates for racquet clubs. The peak hour rates for this category are around 20 percent higher than the ITE racquet club peak hour of generator rates, therefore the ADT rate for this category is estimated to be approximately 20 percent higher than the ITE racquet club ADT rate of 17.14 trips per TSF.

18. Golf Course

ADT trip generation rate of 8.33 trips per acre and the corresponding peak hour rates were taken from the ITE rates for golf courses. AM peak hour IB and OB rates are .22 and .05, respectively, and PM peak hour IB and OB rates are .08 and .31, respectively.

19. Park

ADT trip generation rate of 2.23 trips per acre was taken from the ITE rates for city parks. Peak hour trip generation for this category was assumed to be negligible.

20. Agriculture

ADT trip generation rate of .10 trips per acre and the corresponding peak hour trip rates were taken from selected studies for agricultural uses. AM peak hour IB and OB rates are .01 and .00, respectively, and PM peak hour IB and OB rates are .00 and .01, respectively.

21. Vacant

ADT and peak hour trip generation for this category was assumed to be negligible.

22. SDU (OCTAM-II)

Land use data of this type was taken from the county demographic database and represents single-family dwelling units on the periphery (outside Fountain Valley city limits) of the model study area. The ADT trip generation rate of 10.00 trips per DU and the corresponding AM peak hour IB and OB rates of .20 and .60, respectively, and PM peak hour IB and OB rates of .70 and .40, respectively, were derived from OCTAM-II trip generation estimates for single-family dwelling units.

23. MDU (OCTAM-II)

Land use data of this type was taken from the county demographic database and represents multi-family dwelling units on the periphery (outside Fountain Valley city limits) of the model study area. The ADT trip generation rate of 8.00 trips per DU and the corresponding AM peak hour IB and OB rates of .20 and .50, respectively, and PM peak hour IB and OB rates of .55 and .35, respectively, were derived from OCTAM-II trip generation estimates for multi-family dwelling units.

24. Retail Employment (OCTAM-II)

Land use data of this type was taken from the county demographic database and represents the retail employment base on the periphery (outside Fountain Valley city limits) of the model study area. The ADT trip generation rate of 20.00 trips per employee and the corresponding AM peak hour IB and OB rates of .30 and .16, respectively, and PM peak hour IB and OB rates both of which are .90, were derived from OCTAM-II trip generation estimates for retail employment demographic data.

25. Total Employment (OCTAM-II)

Land use data of this type was taken from the county demographic database and represents the total employment base on the periphery (outside Fountain Valley city limits) of the model study area. The ADT trip generation rate of 3.35 trips per employee and the corresponding AM peak hour IB and OB rates of .28 and .04, respectively, and PM peak hour IB and OB rates of .08 and .24, respectively, were derived from OCTAM-II trip generation estimates for total employment demographic data.

LAND USE DATABASE

As part of the Fountain Valley General Plan Update Study, The Keith Companies prepared a citywide land use inventory for existing (1990) conditions, as well as a number of long-range buildout (Post-2010) land use scenarios to be considered for the updated General Plan. For traffic modeling purposes, the traffic model study area was sub-divided into the 166 traffic analysis zones (TAZs) illustrated in Figure A-1. Land use data by net acreage from the land use inventory and the future land use scenarios was allocated to TAZs 1-122 which are within the Fountain Valley city limits and city sphere.

Residential, commercial/industrial, and public facility net acreage was converted to dwelling unit and square footage estimates by applying the residential density factors and non-residential floor area ratios (FAR's) and conversion factors listed in Table A-3. The residential densities for land use categories 1-4 were taken from the City's current General Plan and were assumed to be appropriate

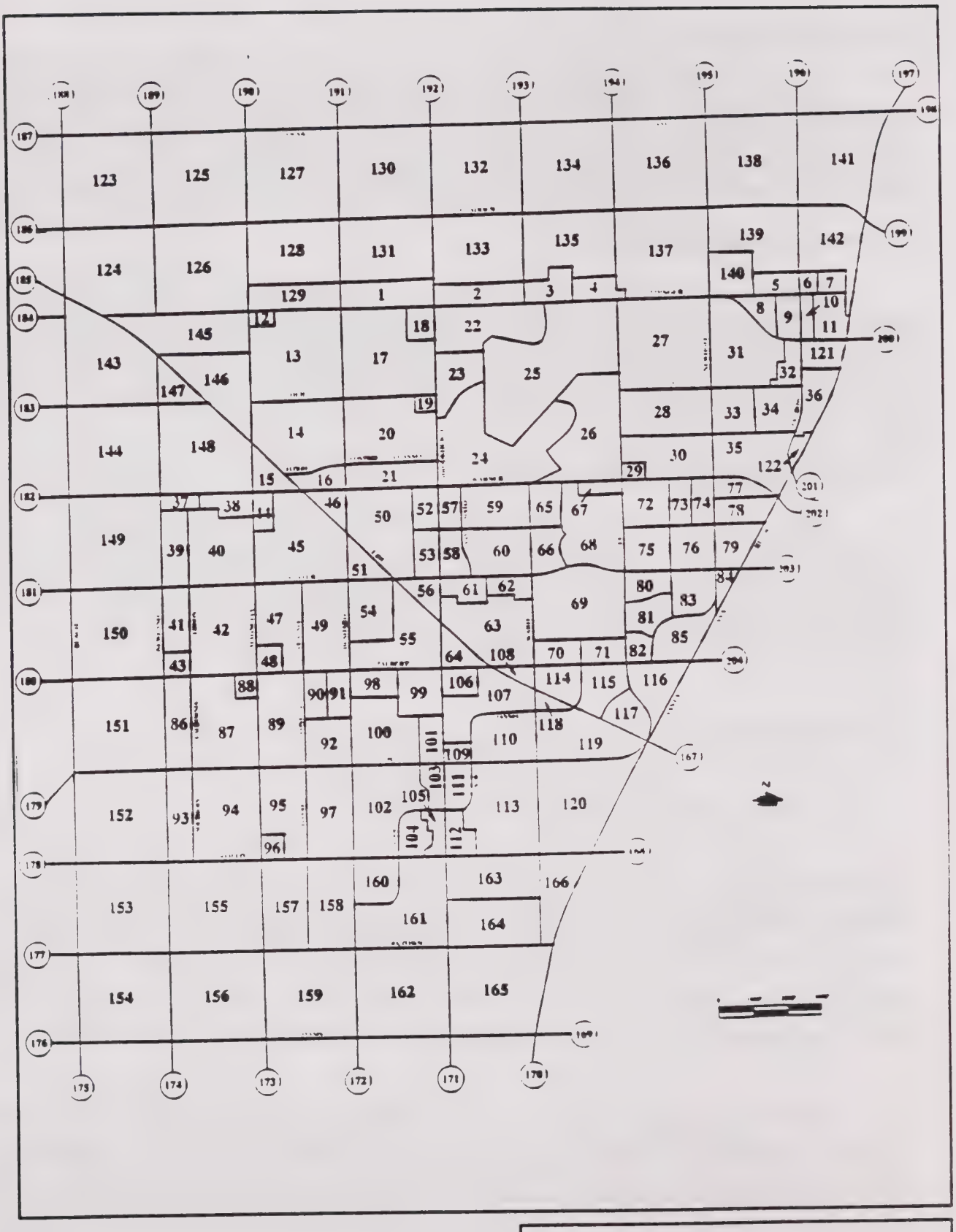


Figure A-1
FVTM ZONE SYSTEM

Table A-3

LAND USE DATABASE CONVERSION FACTORS AND FAR's

TRAFFIC MODEL LAND USE TYPE	EXISTING (1990) CONDITIONS	BUILDOUT (P-2010) CONDITIONS
1. Low Residential	5 DU's/Acre	5 DU's/Acre
2. Low/Medium Residential	10 DU's/Acre	10 DU's/Acre
3. Medium Residential	15 DU's/Acre	15 DU's/Acre
4. High Residential	20 DU's/Acre	20 DU's Acre
5. Local Commercial	.22 FAR	.35 FAR
6. General Commercial	.40 FAR	.50 FAR
7. Office Commercial	.45 FAR	.50 FAR
8. Commercial Manufacturing	.50 FAR	.60 FAR
9. Manufacturing	.35 FAR	.35 FAR
10. Warehouse/Storage	.15 FAR	.15 FAR
11. Elementary/Middle School	50 Students/Acre	50 Students/Acre
12. High School	50 Students/Acre	50 Students/Acre
13. Government Office	.35 FAR	.35 FAR
14. Hotel	.30 FAR 1200 SF/Room	.30 FAR 1200 SF/Room
15. Hospital	.35 FAR	.35 FAR
16. Church	.30 FAR	.30 FAR
17. Recreation Center	.25 FAR	.25 FAR

Abbreviations: DU - Dwelling Unit
FAR - Floor Area Ratio
SF - Square Feet

for both existing and future development. For commercial/industrial development (land use categories 5-8), existing average FAR's were derived by examining existing building intensities for each type of use at several different sites throughout the city. Recommended buildout FAR's for these categories were provided by City Staff. For public facilities (land use categories 9-13 and 15-17), FAR's and conversion factors were derived from existing development of each type within the city and were not assumed to change under future land use conditions. It should be noted that the FAR and conversion factor listed in Table 3 for hotel use (land use category 14) applies to one existing site within the city (TAZ 56) and for General Plan study purposes, the site is analyzed under future conditions as general commercial use (land use category 6).

An exception to the existing and future FAR's listed in Table A-3 was made for the Southpark Specific Plan area (TAZ's 80-83 and 85). The Southpark Development Plan adopted in 1987 designates specific FAR's and types of land uses permitted for various parcels. These FAR's, which were used to derive existing and future square footage estimates for the traffic model land use database, and land use categories are summarized as follows:

SOUTHPARK PARCEL	FVTM TAZ	LAND USE TYPE	FAR
Block A	80	7. Office Commercial	.53
Block B	81	7. Office Commercial	.48
Block C	82	7. Office Commercial	.37
Block D	85	6. General Commercial	.22
Block E	85	8. Commercial Manufacturing	.49
Block F	83	7. Office Commercial	.55
Block F	83	8. Commercial Manufacturing	.55

Land use data for the remainder of the traffic model study area (TAZs 123 - 166) was taken from two sources. For traffic zones north of the I-405 Freeway (TAZs 123 - 142 and 145 - 146), 1990 and Post-2010 socio-economic data (dwelling units and employment) was taken from the County's OCTAM-II database. For traffic zones south of the I-405 (TAZs 143 - 144 and 147 - 166), existing land use data was provided by the City of Huntington Beach, and City Staff recommended that no changes in land use be assumed for Post-2010 conditions since that area is essentially built out. Zonal land use summaries for the entire FVTM study area are included at the end of these technical notes.

PEAK HOUR FVTM TRIP RATES

In peak hour traffic modeling, it is typical to generate trips by means of peak hour trip generation rates that are applied to each of the land uses in the area being analyzed. This is in contrast to larger scale models that derive peak hour values by means of special factors applied to ADT trips. The peak hour rates are taken from accepted sources, and are generally based on survey data. The basic peak hour rates used in the FVTM were described in the previous section.

Peak hour rates derived from research data sources generally represent the actual peak hours of the particular land use in question. Those peak hours do not necessarily coincide with the times at which the peak hours occur on the surrounding street system. To compensate for this variation in the peak hour times of different land uses, a special peak hour factor is typically used in sub-area models. This discounts the peak hour rates by a given amount so that the model peak hour volumes relate to the ADT volumes in a similar manner to that observed on the actual street system. The peak hour factor is derived as part of the model calibration process and compensates for the peak hours of individual land uses being spread out over a longer time period.

For the FVTM, rather than derive applicable peak hour factors, actual peak hour rates are derived for designated peak hours. As part of the traffic model development, a detailed traffic count inventory was made for the FVTM analysis area circulation system. This included machine traffic counts at roadway locations and manual intersection counts. A characteristic traffic pattern on the FVTM circulation system for a typical weekday as derived from the traffic count program is illustrated in Figure A-2. As the diagram indicates, the current morning and evening peak hours in the FVTM area occur from 7:30 to 8:30 AM and 5:00 to 6:00 PM, respectively. The traffic counts also indicate that on an average, the AM and PM peak hour level of traffic is approximately 7.2 and 9.3 percent, respectively, of the total ADT on the FVTM circulation system.

Table A-4 shows the results of applying the basic peak hour trip rates presented earlier to the existing (1990) land uses in the FVTM analysis area. As the table indicates, the total AM peak hour trips generated are around 8.3 percent of the total ADT, 15 percent higher than the observed 7.2 percent, and the total PM peak hour trips generated are 11.5 percent of the ADT, 24 percent higher than the observed 9.3 percent.

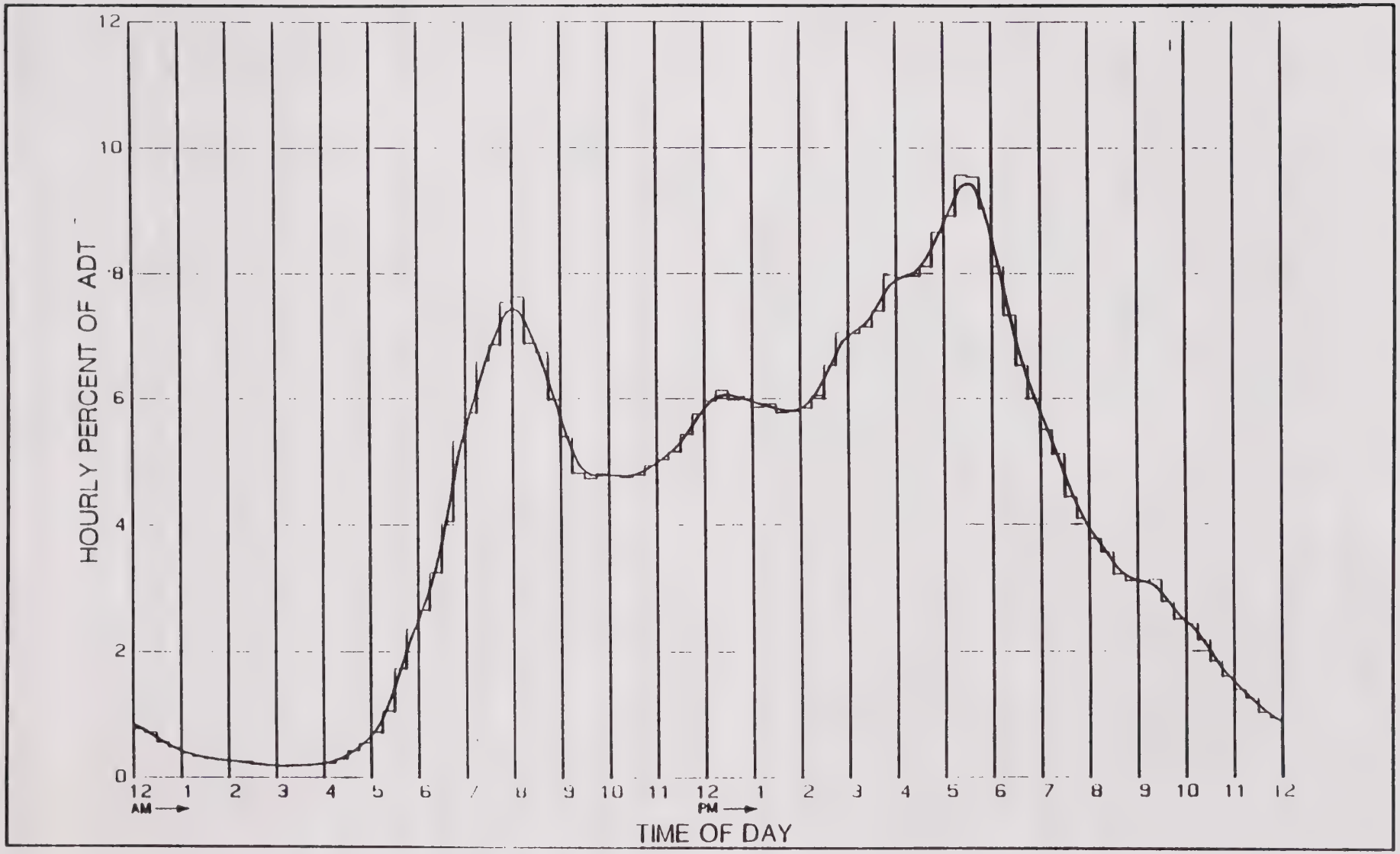


Figure A-2

FVTM ANALYSIS AREA
DAILY TRAFFIC PATTERNS

Table A-4

1990 TRIP GENERATION SUMMARY - BASIC TRIP RATES

Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
1. Low Residential	19875.00 DU	4566	13513	18079	15309	8946	24255	198750
2. Low/Medium Residential	2077.00 DU	457	1225	1682	1350	829	2179	18319
3. Medium Residential	4618.00 DU	969	2264	3233	2401	1617	4018	35328
4. High Residential	3478.00 DU	696	1390	2086	1390	1044	2434	22502
5. Local Commercial	453.95 TSF	540	318	858	1702	1702	3404	36816
6. General Commercial	7027.12 TSF	9766	2176	11942	8148	13845	21993	206598
7. Office Commercial	1273.32 TSF	2345	293	2638	447	2165	2612	19521
8. Commercial Manufacturing	6814.72 TSF	5520	752	6272	1157	5520	6677	47499
10. Warehouse/Storage	985.86 TSF	267	147	414	138	296	434	3697
11. Elementary/Middle School	9776.00 STU	2249	1466	3715	1859	1466	3325	14669
12. High School	4396.00 STU	1319	440	1759	440	879	1319	7913
13. Government Office	124.10 TSF	431	74	505	233	629	862	5833
14. Hotel	281.00 ROOM	90	105	195	121	95	216	2655
15. Hospital	804.05 TSF	668	298	966	387	757	1144	13492
16. Church	237.84 TSF	162	162	324	200	138	338	2217
17. Recreation Center	209.09 TSF	316	230	546	189	294	483	4287
18. Golf Course	253.20 ACRE	55	13	68	20	78	98	2109
19. Park	294.73 ACRE	0	0	0	0	0	0	657
20. Agriculture	132.28 ACRE	0	0	0	0	0	0	11
21. Vacant	92.98 ACRE	0	0	0	0	0	0	0
22. SDU (OCTAM II)	6740.00 DU	1349	4044	5393	4718	2696	7414	67400
23. MDU (OCTAM II)	5809.00 DU	1162	2908	4070	3199	2036	5235	46472
24. Retail Emp. (OCTAM II)	1706.00 EMP	509	270	779	1536	1536	3072	34120
25. Total Emp. (OCTAM II)	6567.00 EMP	1840	260	2100	827	1578	2405	21999
TOTAL		35276	32348	67624	49471	49146	98617	810964

Note: Peak hour trips listed here are generated using the basic peak hour trip rates and for many categories are not those used in the FVTM (see text for explanation).

Table A-5 presents a set of factors which give the trip rate for each half hour during the AM and PM peak periods for various land use types. These factors were derived by analyzing peaking characteristics for individual land use categories from various trip generation surveys performed both within the local Southern California area as well as other regions throughout the country. Trip rates produced by applying the adjustment factors derived for each land use category for the hours of 7:30 to 8:30 AM and 5:00 to 6:00 PM to the basic rates are listed in Table A-6, and Table A-7 shows the recalculated existing (1990) trip generation estimates based on these adjusted rates. As the table indicates, the total AM and PM peak hour generated trips are around 7.4 percent and 9.4 percent, respectively, of the total estimated ADT generation. These percentages are very similar to the observed FVTM circulation system peak hour percentages presented earlier, therefore the rates listed in Table A-6 are used to produce the peak hour trip generation estimates for the FVTM.

LAND USE AND TRIP GENERATION SUMMARIES

The tables which follow summarize the existing (1990) and post-2010 proposed General Plan land use by traffic analysis zone and the corresponding peak hour and ADT trip generation used in the base year (1990) and Post-2010 versions of the FVTM.

Table A-5

HALF HOUR TRIP RATE RELATIONSHIPS

LAND USE	TRIP RATE CATEGORIES	AM PEAK 7:00	7:30	8:00	8:30	PK HR	PM PEAK 3:00	3:30	4:00	4:30	5:00	5:30	PK HR
Residential	1-4,22,23	70	100	100	50	100	20	30	40	50	100	100	100
Commercial	5,6(partial),24	5	15	35	50	25	70	80	100	100	60	50	55
Office	6 (partial),7,13	79	98	102	92	100	61	71	76	91	109	80	95
Light Industrial	8,25	90	88	82	76	85	70	83	91	81	73	56	65
Heavy Industrial/ Warehouse	9,10	100	70	60	40	65	100	100	70	50	40	30	35
Elementary/Middle School	11	70	100	100	50	100	90	60	30	20	10	0	5
High School	12	70	100	100	50	100	90	75	60	45	30	10	20
Hotel	14	10	30	110	90	70	20	20	40	70	100	100	100
Other	15-21	5	80	120	90	100	40	40	80	90	110	90	100

Note: Figures represent percent of basic peak hour trip rate occurring in each half hour of the peak period. Representative AM and PM peak hours for the FVTM circulation system are 7:30 - 8:30 AM and 5:00 - 6:00 PM, respectively.

Table A-6

FVTM ADT AND PEAK HOUR TRIP RATE SUMMARY

Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
1. Low Residential	DU	.23	.68	.91	.77	.45	1.22	10.00
2. Low/Medium Residential	DU	.22	.59	.81	.65	.40	1.05	8.82
3. Medium Residential	DU	.21	.49	.70	.52	.35	.87	7.65
4. High Residential	DU	.20	.40	.60	.40	.30	.70	6.47
5. Local Commercial	TSF	.30	.17	.47	2.06	2.06	4.12	81.10
6. General Commercial	TSF	.83	.19	1.02	.81	1.38	2.19	29.40
7. Office Commercial	TSF	1.84	.23	2.07	.33	1.62	1.95	15.33
8. Commercial Manufacturing	TSF	.69	.09	.78	.11	.53	.64	6.97
9. Manufacturing	TSF	.40	.10	.50	.13	.14	.27	3.85
10. Warehouse/Storage	TSF	.18	.10	.28	.05	.11	.16	3.75
11. Elementary/Middle School	STU	.23	.15	.38	.01	.01	.02	1.50
12. High School	STU	.30	.10	.40	.02	.04	.06	1.80
13. Government Office	TSF	3.47	.60	4.07	1.79	4.82	6.61	47.00
14. Hotel	ROOM	.22	.26	.48	.43	.34	.77	9.45
15. Hospital	TSF	.83	.37	1.20	.48	.94	1.42	16.78
16. Church	TSF	.69	.69	1.38	.84	.58	1.42	9.32
17. Recreation Center	TSF	1.51	1.10	2.61	.90	1.41	2.31	20.50
18. Golf Course	ACRE	.22	.05	.27	.08	.31	.39	8.33
19. Park	ACRE	.00	.00	.00	.00	.00	.00	2.23
20. Agriculture	ACRE	.01	.00	.01	.00	.01	.01	.10
21. Vacant	ACRE	.00	.00	.00	.00	.00	.00	.00
22. SDU (OCTAM II)	DU	.20	.60	.80	.70	.40	1.10	10.00
23. MDU (OCTAM II)	DU	.20	.50	.70	.55	.35	.90	8.00
24. Retail Emp. (OCTAM II)	EMP	.08	.04	.12	.60	.50	1.10	10.00
25. Total Emp. (OCTAM II)	EMP	.24	.03	.27	.05	.16	.21	3.35

Note: Peak hour trip rates listed here are those used in the FVTM. See text for explanation on derivation from the basic peak hour trip rates.

Table A-7

1990 TRIP GENERATION SUMMARY - FVTM TRIP RATES

Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
1. Low Residential	19875.00 DU	4566	13513	18079	15309	8946	24255	198750
2. Low/Medium Residential	2077.00 DU	457	1225	1682	1350	829	2179	18319
3. Medium Residential	4618.00 DU	969	2264	3233	2401	1617	4018	35328
4. High Residential	3478.00 DU	696	1390	2086	1390	1044	2434	22502
5. Local Commercial	453.95 TSF	134	77	211	935	935	1870	36816
6. General Commercial	7027.12 TSF	5835	1336	7171	5695	9697	15392	206598
7. Office Commercial	1273.32 TSF	2345	293	2638	421	2064	2485	19521
8. Commercial Manufacturing	6814.72 TSF	4701	616	5317	752	3611	4363	47499
10. Warehouse/Storage	985.86 TSF	178	98	276	49	108	157	3697
11. Elementary/Middle School	9776.00 STU	2249	1466	3715	97	97	194	14669
12. High School	4396.00 STU	1319	440	1759	88	176	264	7913
13. Government Office	124.10 TSF	431	74	505	222	598	820	5833
14. Hotel	281.00 ROOM	62	74	136	121	95	216	2655
15. Hospital	804.05 TSF	668	298	966	387	757	1144	13492
16. Church	237.84 TSF	162	162	324	200	138	338	2217
17. Recreation Center	209.09 TSF	316	230	546	189	294	483	4287
18. Golf Course	253.20 ACRE	55	13	68	20	78	98	2109
19. Park	294.73 ACRE	0	0	0	0	0	0	657
20. Agriculture	132.28 ACRE	0	0	0	0	0	0	11
21. Vacant	92.98 ACRE	0	0	0	0	0	0	0
22. SDU (OCTAM II)	6740.00 DU	1349	4044	5393	4718	2696	7414	67400
23. MDU (OCTAM II)	5809.00 DU	1162	2908	4070	3199	2036	5235	46472
24. Retail Emp. (OCTAM II)	1706.00 EMP	137	70	207	857	857	1714	34120
25. Total Emp. (OCTAM II)	6567.00 EMP	1578	198	1776	330	1048	1378	21999
TOTAL		29369	30789	60158	38730	37721	76451	812864

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
1	1. Low Residential	185.00 DU	43	126	169	142	83	225	1850
	SUB-TOTAL		43	126	169	142	83	225	1850
2	1. Low Residential	154.00 DU	35	105	140	119	69	188	1540
	6. General Commercial	16.03 TSF	13	3	16	13	22	35	471
	SUB-TOTAL		48	108	156	132	91	223	2011
3	1. Low Residential	82.00 DU	19	56	75	63	37	100	820
	SUB-TOTAL		19	56	75	63	37	100	820
4	2. Low/Medium Residential	53.00 DU	12	31	43	34	21	55	467
	5. Local Commercial	4.98 TSF	1	1	2	10	10	20	404
	SUB-TOTAL		13	32	45	44	31	75	871
5	2. Low/Medium Residential	86.00 DU	19	51	70	56	34	90	759
	6. General Commercial	26.14 TSF	22	5	27	21	36	57	769
	SUB-TOTAL		41	56	97	77	70	147	1528
6	20. Agriculture	5.75 ACRE	0	0	0	0	0	0	1
	SUB-TOTAL		0	0	0	0	0	0	1
7	1. Low Residential	58.00 DU	13	39	52	45	26	71	580
	SUB-TOTAL		13	39	52	45	26	71	580
8	2. Low/Medium Residential	166.00 DU	37	98	135	108	66	174	1464
	5. Local Commercial	42.45 TSF	13	7	20	87	87	174	3443
	19. Park	0.33 ACRE	0	0	0	0	0	0	1
	SUB-TOTAL		50	105	155	195	153	348	4908
9	6. General Commercial	265.72 TSF	221	50	271	215	367	582	7812
	SUB-TOTAL		221	50	271	215	367	582	7812
10	6. General Commercial	105.42 TSF	87	20	107	85	145	230	3099
	SUB-TOTAL		87	20	107	85	145	230	3099
11	1. Low Residential	120.00 DU	28	82	110	92	54	146	1200
	20. Agriculture	1.80 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		28	82	110	92	54	146	1200
12	5. Local Commercial	30.95 TSF	9	5	14	64	64	128	2510
	SUB-TOTAL		9	5	14	64	64	128	2510
13	1. Low Residential	558.00 DU	128	379	507	430	251	681	5580
	5. Local Commercial	12.55 TSF	4	2	6	26	26	52	1018
	11. Elementary/Middle School	677.00 STU	156	102	258	7	7	14	1016
	19. Park	3.05 ACRE	0	0	0	0	0	0	7
	SUB-TOTAL		288	483	771	463	284	747	7621

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
14	1. Low Residential	347.00 DU	80	236	316	267	156	423	3470
	21. Vacant	15.80 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		80	236	316	267	156	423	3470
15	1. Low Residential	5.00 DU	1	3	4	4	2	6	50
	6. General Commercial	222.68 TSF	185	42	227	180	307	487	6547
	SUB-TOTAL		186	45	231	184	309	493	6597
16	3. Medium Residential	118.00 DU	25	58	83	61	41	102	903
	5. Local Commercial	16.39 TSF	5	3	8	34	34	68	1329
	SUB-TOTAL		30	61	91	95	75	170	2232
17	1. Low Residential	489.00 DU	112	333	445	377	220	597	4890
	11. Elementary/Middle School	478.00 STU	110	72	182	5	5	10	717
	19. Park	3.17 ACRE	0	0	0	0	0	0	7
	SUB-TOTAL		222	405	627	382	225	607	5614
18	6. General Commercial	319.21 TSF	265	61	326	259	441	700	9385
	SUB-TOTAL		265	61	326	259	441	700	9385
19	5. Local Commercial	41.59 TSF	12	7	19	86	86	172	3373
	SUB-TOTAL		12	7	19	86	86	172	3373
20	1. Low Residential	481.00 DU	111	327	438	370	216	586	4810
	11. Elementary/Middle School	209.00 STU	48	31	79	2	2	4	314
	SUB-TOTAL		159	358	517	372	218	590	5124
21	1. Low Residential	106.00 DU	24	72	96	92	48	140	1080
	5. Local Commercial	3.15 TSF	2	1	3	2	2	4	661
	11. Elementary/Middle School	500.00 STU	115	75	190	5	5	10	750
	SUB-TOTAL		141	148	289	104	70	174	2471
22	18. Golf Course	101.30 ACRE	22	5	27	8	31	39	844
	SUB-TOTAL		22	5	27	8	31	39	844
23	17. Recreation Center	179.69 TSF	271	198	469	162	253	415	3684
	SUB-TOTAL		271	198	469	162	253	415	3684
24	18. Golf Course	151.90 ACRE	33	8	41	12	47	59	1265
	SUB-TOTAL		33	8	41	12	47	59	1265
25	19. Park	70.00 ACRE	0	0	0	0	0	0	156
	SUB-TOTAL		0	0	0	0	0	0	156
26	19. Park	100.00 ACRE	0	0	0	0	0	0	223
	SUB-TOTAL		0	0	0	0	0	0	223
27	1. Low Residential	502.00 DU	115	341	456	387	226	613	5020

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
27	5. Local Commercial	4.31 TSF	1	1	2	9	9	18	350
	11. Elementary/Middle School	442.00 STU	102	66	168	4	4	8	663
	19. Park	2.53 ACRE	0	0	0	0	0	0	6
	20. Agriculture	18.63 ACRE	0	0	0	0	0	0	2
	SUB-TOTAL		218	408	626	400	239	639	6041
28	1. Low Residential	330.00 DU	76	224	300	254	149	403	3300
	19. Park	2.27 ACRE	0	0	0	0	0	0	5
	SUB-TOTAL		76	224	300	254	149	403	3305
29	6. General Commercial	87.99 TSF	73	17	90	71	121	192	2587
	SUB-TOTAL		73	17	90	71	121	192	2587
30	1. Low Residential	241.00 DU	55	164	219	186	108	294	2410
	11. Elementary/Middle School	482.00 STU	111	72	183	5	5	10	723
	20. Agriculture	1.30 ACRE	0	0	0	0	0	0	0
	UB-TOTAL		166	236	402	191	113	304	3133
31	1. Low Residential	365.00 DU	84	248	332	281	164	445	3650
	3. Medium Residential	128.00 DU	27	63	90	67	45	112	979
	21. Vacant	1.90 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		111	311	422	348	209	557	4629
32	4. High Residential	103.00 DU	21	41	62	41	31	72	666
	6. General Commercial	90.78 TSF	75	17	92	74	125	199	2669
	21. Vacant	0.87 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		96	58	154	115	156	271	3335
33	12. High School	1840.00 STU	552	184	736	37	74	111	3312
	SUB-TOTAL		552	184	736	37	74	111	3312
34	1. Low Residential	159.00 DU	37	108	145	122	72	194	1590
	SUB-TOTAL		37	108	145	122	72	194	1590
35	1. Low Residential	210.00 DU	48	143	191	162	95	257	2100
	2. Low/Medium Residential	91.00 DU	20	54	74	59	36	95	803
	3. Medium Residential	151.00 DU	32	74	106	79	53	132	1155
	20. Agriculture	4.55 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		100	271	371	300	184	484	4058
36	4. High Residential	211.00 DU	42	84	126	84	63	147	1365
	8. Commercial Manufacturing	463.91 TSF	320	42	362	51	246	297	3233
	SUB-TOTAL		362	126	488	135	309	444	4598
37	5. Local Commercial	41.78 TSF	13	7	20	86	86	172	3388
	SUB-TOTAL		13	7	20	86	86	172	3388
38	6. General Commercial	293.94 TSF	244	56	300	238	406	644	8642
	SUB-TOTAL		244	56	300	238	406	644	8642

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
39	1. Low Residential	145.00 DU	33	99	132	112	65	177	1450
	SUB-TOTAL		33	99	132	112	65	177	1450
40	1. Low Residential	287.00 DU	66	195	261	221	129	350	2870
	11. Elementary/Middle School	963.00 STU	221	144	365	10	10	20	1445
	19. Park	7.25 ACRE	0	0	0	0	0	0	16
	SUB-TOTAL		287	339	626	231	139	370	4331
41	1. Low Residential	128.00 DU	29	87	116	99	58	157	1280
	19. Park	5.58 ACRE	0	0	0	0	0	0	12
	SUB-TOTAL		29	87	116	99	58	157	1292
42	1. Low Residential	382.00 DU	88	260	348	294	172	466	3820
	5. Local Commercial	13.80 TSF	4	2	6	28	28	56	1119
	11. Elementary/Middle School	709.00 STU	163	106	269	7	7	14	1064
	19. Park	5.81 ACRE	0	0	0	0	0	0	13
	SUB-TOTAL		255	368	623	329	207	536	6016
43	6. General Commercial	96.53 TSF	80	18	98	78	133	211	2838
	21. Vacant	3.06 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		80	18	98	78	133	211	2838
44	6. General Commercial	174.41 TSF	145	33	178	141	241	382	5128
	SUB-TOTAL		145	33	178	141	241	382	5128
45	1. Low Residential	416.00 DU	96	283	379	320	187	507	4160
	21. Vacant	14.75 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		96	283	379	320	187	507	4160
46	6. General Commercial	154.38 TSF	128	29	157	125	213	338	4539
	SUB-TOTAL		128	29	157	125	213	338	4539
47	1. Low Residential	240.00 DU	55	163	218	185	108	293	2400
	20. Agriculture	9.24 ACRE	0	0	0	0	0	0	1
	SUB-TOTAL		55	163	218	185	108	293	2401
48	6. General Commercial	150.19 TSF	125	29	154	122	207	329	4416
	SUB-TOTAL		125	29	154	122	207	329	4416
49	1. Low Residential	249.00 DU	57	169	226	192	112	304	2490
	11. Elementary/Middle School	234.00 STU	54	35	89	2	2	4	351
	19. Park	6.61 ACRE	0	0	0	0	0	0	15
	20. Agriculture	0.88 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		111	204	315	194	114	308	2856
50	1. Low Residential	373.00 DU	86	254	340	287	168	455	3730
	5. Local Commercial	19.74 TSF	6	3	9	41	41	82	1601
	16. Church	26.40 TSF	18	18	36	22	15	37	246

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone		Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
50	19.	Park	1.33 ACRE	0	0	0	0	0	0	3
	20.	Agriculture	1.02 ACRE	0	0	0	0	0	0	0
		SUB-TOTAL		110	275	385	350	224	574	5580
51	4.	High Residential	292.00 DU	58	117	175	117	88	205	1889
		SUB-TOTAL		58	117	175	117	88	205	1889
52	6.	General Commercial	304.92 TSF	253	58	311	247	421	668	8965
		SUB-TOTAL		253	58	311	247	421	668	8965
53	4.	High Residential	223.00 DU	45	89	134	89	67	156	1443
	5.	Local Commercial	16.48 TSF	5	3	8	34	34	68	1337
		SUB-TOTAL		50	92	142	123	101	224	2780
54	6.	General Commercial	32.93 TSF	27	6	33	27	45	72	968
	12.	High School	2556.00 STU	767	256	1023	51	102	153	4601
	16.	Church	42.73 TSF	29	29	58	36	25	61	398
		SUB-TOTAL		823	291	1114	114	172	286	5967
55	1.	Low Residential	229.00 DU	53	156	209	176	103	279	2290
	6.	General Commercial	14.46 TSF	12	3	15	12	20	32	425
	16.	Church	38.29 TSF	26	26	52	32	22	54	357
	20.	Agriculture	1.67 ACRE	0	0	0	0	0	0	0
		SUB-TOTAL		91	185	276	220	145	365	3072
56	14.	Hotel	83.00 ROOM	18	22	40	36	28	64	784
		SUB-TOTAL		18	22	40	36	28	64	784
57	6.	General Commercial	282.62 TSF	235	54	289	229	390	619	8309
		SUB-TOTAL		235	54	289	229	390	619	8309
58	6.	General Commercial	433.86 TSF	360	82	442	351	599	950	12755
		SUB-TOTAL		360	82	442	351	599	950	12755
59	1.	Low Residential	89.00 DU	20	61	81	69	40	109	890
	4.	High Residential	726.00 DU	145	290	435	290	218	508	4697
	20.	Agriculture	1.41 ACRE	0	0	0	0	0	0	0
	21.	Vacant	1.84 ACRE	0	0	0	0	0	0	0
		SUB-TOTAL		165	351	516	359	258	617	5587
60	1.	Low Residential	80.00 DU	18	54	72	62	36	98	800
	3.	Medium Residential	106.00 DU	22	52	74	55	37	92	811
	4.	High Residential	421.00 DU	84	168	252	168	126	294	2724
	19.	Park	0.69 ACRE	0	0	0	0	0	0	2
	20.	Agriculture	0.40 ACRE	0	0	0	0	0	0	0
	21.	Vacant	1.29 ACRE	0	0	0	0	0	0	0
		SUB-TOTAL		124	274	398	285	199	484	4337

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
61	6. General Commercial	167.44 TSF	139	32	171	136	231	367	4923
	13. Government Office	124.10 TSF	431	74	505	222	598	820	5833
	SUB-TOTAL		570	106	676	358	829	1187	10756
62	1. Low Residential	43.00 DU	10	29	39	33	19	52	430
	5. Local Commercial	75.80 TSF	23	13	36	156	156	312	6147
	SUB-TOTAL		33	42	75	189	175	364	6577
63	1. Low Residential	369.00 DU	85	251	336	284	166	450	3690
	SUB-TOTAL		85	251	336	284	166	450	3690
64	6. General Commercial	146.71 TSF	122	28	150	119	202	321	4313
	SUB-TOTAL		122	28	150	119	202	321	4313
65	1. Low Residential	78.00 DU	18	53	71	60	35	95	780
	SUB-TOTAL		18	53	71	60	35	95	780
66	5. Local Commercial	67.37 TSF	20	11	31	139	139	278	5464
	11. Elementary/Middle School	445.00 STU	102	67	169	4	4	8	668
	16. Church	65.34 TSF	45	45	90	55	38	93	609
	SUB-TOTAL		167	123	290	198	181	379	6741
67	6. General Commercial	162.39 TSF	135	31	166	132	224	356	4774
	SUB-TOTAL		135	31	166	132	224	356	4774
68	1. Low Residential	373.00 DU	86	254	340	137	168	305	3700
	2. Low/Medium Residential	86.00 DU	19	61	80	35	1	42	779
	19. Park	0.98 ACRE	0	0	0	0	0	0	52
	SUB-TOTAL		105	315	420	172	169	341	4531
69	1. Low Residential	326.00 DU	75	222	297	251	147	398	3260
	2. Low/Medium Residential	258.00 DU	57	152	209	168	103	271	2276
	11. Elementary/Middle School	677.00 STU	156	102	258	7	7	14	1016
	16. Church	33.98 TSF	23	23	46	29	20	49	317
	17. Recreation Center	22.87 TSF	35	25	60	21	32	53	469
	19. Park	2.90 ACRE	0	0	0	0	0	0	6
	SUB-TOTAL		346	524	870	476	309	785	7344
70	1. Low Residential	79.00 DU	18	54	72	61	36	97	790
	SUB-TOTAL		18	54	72	61	36	97	790
71	1. Low Residential	69.00 DU	16	47	63	53	31	84	690
	5. Local Commercial	10.83 TSF	3	2	5	22	22	44	878
	SUB-TOTAL		19	49	68	75	53	128	1568
72	7. Office Commercial	135.84 TSF	250	31	281	45	220	265	2082
	15. Hospital	528.43 TSF	439	196	635	254	497	751	8867
	21. Vacant	2.05 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		689	227	916	299	717	1016	10949

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone		Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
73	7.	Office Commercial	39.20 TSF	72	9	81	13	64	77	601
	20.	Agriculture	9.09 ACRE	0	0	0	0	0	0	1
	21.	Vacant	5.70 ACRE	0	0	0	0	0	0	0
		SUB-TOTAL		72	9	81	13	64	77	602
74	7.	Office Commercial	99.97 TSF	184	23	207	33	162	195	1533
	8.	Commercial Manufacturing	196.02 TSF	135	18	153	22	104	126	1366
	21.	Vacant	4.30 ACRE	0	0	0	0	0	0	0
		SUB-TOTAL		319	41	360	55	266	321	2899
75	3.	Medium Residential	230.00 DU	48	113	161	120	81	201	1760
	8.	Commercial Manufacturing	411.42 TSF	284	37	321	45	218	263	2868
		SUB-TOTAL		332	150	482	165	299	464	4628
76	8.	Commercial Manufacturing	571.29 TSF	394	51	445	63	303	366	3982
	21.	Vacant	7.20 ACRE	0	0	0	0	0	0	0
		SUB-TOTAL		394	51	445	63	303	366	3982
77	7.	Office Commercial	217.19 TSF	400	50	450	72	352	424	3330
	8.	Commercial Manufacturing	98.01 TSF	68	9	77	11	52	63	683
	17.	Recreation Center	6.53 TSF	10	7	17	6	9	15	134
		SUB-TOTAL		478	66	544	89	413	502	4147
78	1.	Low Residential	15.00 DU	3	10	13	12	7	19	150
	8.	Commercial Manufacturing	568.68 TSF	392	51	443	63	301	364	2964
		SUB-TOTAL		395	61	456	75	308	383	3114
79	8.	Commercial Manufacturing	596.12 TSF	411	54	465	66	316	382	3155
		SUB-TOTAL		411	54	465	66	316	382	3155
80	20.	Agriculture	20.30 ACRE	0	0	0	0	0	0	2
		SUB-TOTAL		0	0	0	0	0	0	2
81	20.	Agriculture	24.50 ACRE	0	0	0	0	0	0	2
		SUB-TOTAL		0	0	0	0	0	0	2
82	20.	Agriculture	10.10 ACRE	0	0	0	0	0	0	1
		SUB-TOTAL		0	0	0	0	0	0	1
83	7.	Office Commercial	195.74 TSF	360	45	405	65	317	382	3001
	8.	Commercial Manufacturing	163.63 TSF	113	15	128	18	87	105	1141
	20.	Agriculture	14.60 ACRE	0	0	0	0	0	0	1
		SUB-TOTAL		473	60	533	83	404	487	4143
84	8.	Commercial Manufacturing	255.48 TSF	176	23	199	28	135	163	1781
		SUB-TOTAL		176	23	199	28	135	163	1781
85	6.	General Commercial	286.92 TSF	238	55	293	232	396	628	8435

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
85	8. Commercial Manufacturing	106.72 TSF	74	10	84	12	57	69	744
	21. Vacant	6.56 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		312	65	377	244	453	697	9179
86	1. Low Residential	224.00 DU	52	152	204	172	101	273	2240
	2. Low/Medium Residential	76.00 DU	17	45	62	49	30	79	670
	21. Vacant	0.24 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		69	197	266	221	131	352	2910
87	1. Low Residential	274.00 DU	63	186	249	211	123	334	2740
	11. Elementary/Middle School	623.00 STU	143	93	236	6	6	12	935
	SUB-TOTAL		206	279	485	217	129	346	3675
88	6. General Commercial	96.01 TSF	80	18	98	78	132	210	2823
	SUB-TOTAL		80	18	98	78	132	210	2823
89	1. Low Residential	306.00 DU	70	208	278	236	138	374	3060
	5. Local Commercial	11.31 TSF	3	2	5	23	23	46	917
	19. Park	2.89 ACRE	0	0	0	0	0	0	6
	21. Vacant	2.00 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		73	210	283	259	161	420	3983
90	3. Medium Residential	379.00 DU	80	186	266	197	133	330	2899
	SUB-TOTAL		80	186	266	197	133	330	2899
91	1. Low Residential	55.00 DU	13	37	50	42	25	67	550
	5. Local Commercial	4.12 TSF	1	1	2	9	9	18	324
	16. Church	31.10 TSF	21	21	42	26	13	44	330
	21. Vacant	0.52 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		35	59	94	76	51	127	1174
92	1. Low Residential	162.00 DU	37	110	147	125	73	198	1620
	SUB-TOTAL		37	110	147	125	73	198	1620
93	1. Low Residential	140.00 DU	32	95	127	108	63	171	1400
	19. Park	2.03 ACRE	0	0	0	0	0	0	5
	SUB-TOTAL		32	95	127	108	63	171	1405
94	1. Low Residential	362.00 DU	83	246	329	279	163	442	3620
	6. General Commercial	29.45 TSF	24	6	30	24	41	65	866
	19. Park	70.09 ACRE	0	0	0	0	0	0	156
	21. Vacant	14.00 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		107	252	359	303	204	507	4642
95	1. Low Residential	295.00 DU	68	201	269	227	133	360	2950
	SUB-TOTAL		68	201	269	227	133	360	2950
96	6. General Commercial	108.03 TSF	90	21	111	88	149	237	3176
	SUB-TOTAL		90	21	111	88	149	237	3176

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
97	1. Low Residential	295.00 DU	68	201	269	227	133	360	2950
	19. Park	4.33 ACRE	0	0	0	0	0	0	10
	SUB-TOTAL		68	201	269	227	133	360	2960
98	1. Low Residential	93.00 DU	21	63	84	72	42	114	930
	5. Local Commercial	3.83 TSF	1	1	2	8	8	16	311
	20. Agriculture	0.47 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		22	64	86	80	50	130	1241
99	2. Low/Medium Residential	150.00 DU	33	88	121	98	60	158	1323
	6. General Commercial	148.28 TSF	123	28	151	120	205	325	4359
	15. Hospital	134.62 TSF	112	50	162	65	127	192	2259
	SUB-TOTAL		268	166	434	283	392	675	7941
100	1. Low Residential	256.00 DU	59	174	233	197	115	312	2560
	3. Medium Residential	373.00 DU	78	183	261	194	131	325	2853
	20. Agriculture	0.87 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		137	357	494	391	246	637	5413
101	6. General Commercial	308.06 TSF	256	59	315	250	425	675	9057
	SUB-TOTAL		256	59	315	250	425	675	9057
102	1. Low Residential	212.00 DU	49	144	193	163	95	258	2120
	2. Low/Medium Residential	51.00 DU	11	30	41	33	20	53	450
	5. Local Commercial	17.82 TSF	5	3	8	37	37	74	1445
	11. Elementary/Middle School	649.00 STU	149	97	246	6	6	12	374
	20. Agriculture	4.20 ACRE	0	0	0	1	1	1	1
	21. Vacant	3.00 ACRE	0	0	1	1	1	1	1
	SUB-TOTAL		214	274	488	239	158	397	4389
103	6. General Commercial	230.17 TSF	191	44	235	186	318	504	6767
	SUB-TOTAL		191	44	235	186	318	504	6767
104	1. Low Residential	130.00 DU	30	88	118	100	59	159	1300
	SUB-TOTAL		30	88	118	100	59	159	1300
105	6. General Commercial	92.52 TSF	77	18	95	75	128	203	2720
	21. Vacant	1.80 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		77	18	95	75	128	203	2720
106	6. General Commercial	154.90 TSF	129	29	158	125	214	339	4554
	SUB-TOTAL		129	29	158	125	214	339	4554
107	3. Medium Residential	1086.00 DU	228	532	760	565	380	945	9308
	SUB-TOTAL		228	532	760	565	380	945	9308
108	7. Office Commercial	13.92 TSF	26	3	29	5	23	28	213
	21. Vacant	3.00 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		26	3	29	5	23	28	213

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
109	6. General Commercial	115.17 TSF	96	22	118	93	159	252	3386
	20. Agriculture	1.50 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		96	22	118	93	159	252	3386
110	1. Low Residential	362.00 DU	83	246	329	279	163	442	3620
	19. Park	2.89 ACRE	0	0	0	0	0	0	6
	SUB-TOTAL		83	246	329	279	163	442	3626
111	2. Low/Medium Residential	65.00 DU	14	38	52	42	26	68	573
	6. General Commercial	16.73 TSF	14	3	17	14	23	37	492
	SUB-TOTAL		28	41	69	56	49	105	1065
112	6. General Commercial	225.47 TSF	187	43	230	183	311	494	6629
	SUB-TOTAL		187	43	230	183	311	494	6629
113	1. Low Residential	641.00 DU	147	436	583	494	288	782	6410
	8. Commercial Manufacturing	188.61 TSF	130	17	147	21	100	121	1315
	11. Elementary/Middle School	689.00 STU	158	103	261	7	7	14	1034
	SUB-TOTAL		435	556	991	522	395	917	8759
114	8. Commercial Manufacturing	375.92 TSF	259	34	293	41	199	240	2620
	SUB-TOTAL		259	34	293	41	199	240	2620
115	8. Commercial Manufacturing	459.34 TSF	317	41	358	51	243	294	3202
	SUB-TOTAL		317	41	358	51	243	294	3202
116	8. Commercial Manufacturing	643.60 TSF	444	58	502	71	341	412	4486
	SUB-TOTAL		444	58	502	71	341	412	4486
117	8. Commercial Manufacturing	318.86 TSF	220	29	249	35	169	204	2222
	SUB-TOTAL		220	29	249	35	169	204	2222
118	10. Warehouse/Storage	147.41 TSF	27	15	42	7	16	23	553
	SUB-TOTAL		27	15	42	7	16	23	553
119	8. Commercial Manufacturing	853.99 TSF	589	77	666	94	453	547	5952
	SUB-TOTAL		589	77	666	94	453	547	5952
120	8. Commercial Manufacturing	408.38 TSF	282	37	319	45	216	261	2846
	10. Warehouse/Storage	714.62 TSF	129	71	200	36	79	115	2680
	SUB-TOTAL		411	108	519	81	295	376	5526
121	3. Medium Residential	149.00 DU	31	73	104	77	52	129	1140
	SUB-TOTAL		31	73	104	77	52	129	1140
122	8. Commercial Manufacturing	128.50 TSF	89	12	101	14	68	82	896
	21. Vacant	3.10 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		89	12	101	14	68	82	896

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
123	22. SDU (OCTAM II)	512.00 DU	102	307	409	358	205	563	5120
	23. MDU (OCTAM II)	269.00 DU	54	135	189	148	94	242	2152
	24. Retail Emp. (OCTAM II)	164.00 EMP	13	7	20	82	82	164	3280
	25. Total Emp. (OCTAM II)	358.00 EMP	86	11	97	18	57	75	1199
	SUB-TOTAL		255	460	715	606	438	1044	11751
124	22. SDU (OCTAM II)	353.00 DU	71	212	283	247	141	388	3530
	23. MDU (OCTAM II)	150.00 DU	30	75	105	83	53	136	1200
	24. Retail Emp. (OCTAM II)	86.00 EMP	7	3	10	43	43	86	1720
	25. Total Emp. (OCTAM II)	103.00 EMP	25	3	28	5	16	21	345
	SUB-TOTAL		133	293	426	378	253	631	6795
125	22. SDU (OCTAM II)	512.00 DU	102	307	409	358	205	563	5120
	23. MDU (OCTAM II)	269.00 DU	54	135	189	148	94	242	2152
	24. Retail Emp. (OCTAM II)	164.00 EMP	13	7	20	82	82	164	3280
	25. Total Emp. (OCTAM II)	358.00 EMP	86	11	97	18	57	75	1199
	SUB-TOTAL		255	460	715	606	438	1044	11751
126	22. SDU (OCTAM II)	353.00 DU	71	212	283	247	141	388	3530
	23. MDU (OCTAM II)	150.00 DU	30	75	105	83	53	136	1200
	24. Retail Emp. (OCTAM II)	86.00 EMP	7	3	10	43	43	86	1720
	25. Total Emp. (OCTAM II)	103.00 EMP	25	3	28	5	16	21	345
	SUB-TOTAL		133	293	426	378	253	631	6795
127	22. SDU (OCTAM II)	183.00 DU	37	110	147	128	73	201	1830
	23. MDU (OCTAM II)	832.00 DU	166	416	582	458	291	749	6656
	24. Retail Emp. (OCTAM II)	71.00 EMP	6	3	9	36	36	72	1420
	25. Total Emp. (OCTAM II)	371.00 EMP	89	11	100	19	59	78	1243
	SUB-TOTAL		298	540	838	641	459	1100	11149
128	22. SDU (OCTAM II)	383.00 DU	77	230	307	268	153	421	3830
	24. Retail Emp. (OCTAM II)	50.00 EMP	4	2	6	25	25	50	1000
	25. Total Emp. (OCTAM II)	260.00 EMP	62	8	70	13	42	55	871
	SUB-TOTAL		143	240	383	306	220	526	5701
129	22. SDU (OCTAM II)	164.00 DU	33	98	131	115	66	181	1640
	24. Retail Emp. (OCTAM II)	21.00 EMP	2	1	3	11	11	22	420
	25. Total Emp. (OCTAM II)	111.00 EMP	27	3	30	6	18	24	372
	SUB-TOTAL		62	102	164	132	95	227	2432
130	22. SDU (OCTAM II)	183.00 DU	37	110	147	128	73	201	1830
	23. MDU (OCTAM II)	832.00 DU	166	416	582	458	291	749	6656
	24. Retail Emp. (OCTAM II)	71.00 EMP	6	3	9	36	36	72	1420
	25. Total Emp. (OCTAM II)	371.00 EMP	89	11	100	19	59	78	1243
	SUB-TOTAL		298	540	838	641	459	1100	11149
131	22. SDU (OCTAM II)	308.00 DU	62	185	247	216	123	339	3080
	24. Retail Emp. (OCTAM II)	71.00 EMP	6	3	9	36	36	72	1420

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
131	25. Total Emp. (OCTAM II)	371.00 EMP	89	11	100	19	59	78	1243
	SUB-TOTAL		157	199	356	271	218	489	5743
132	22. SDU (OCTAM II)	495.00 DU	99	297	396	347	198	545	4950
	23. MDU (OCTAM II)	352.00 DU	70	176	246	194	123	317	2816
	24. Retail Emp. (OCTAM II)	37.00 EMP	3	1	4	19	19	38	740
	25. Total Emp. (OCTAM II)	132.00 EMP	32	4	36	7	21	28	442
	SUB-TOTAL		204	478	682	567	361	928	8948
133	22. SDU (OCTAM II)	320.00 DU	64	192	256	224	128	352	3200
	24. Retail Emp. (OCTAM II)	17.00 EMP	1	1	2	9	9	18	340
	25. Total Emp. (OCTAM II)	112.00 EMP	27	3	30	6	18	24	375
	SUB-TOTAL		92	196	288	239	155	394	3915
134	22. SDU (OCTAM II)	430.00 DU	86	258	344	301	172	473	4300
	23. MDU (OCTAM II)	350.00 DU	70	175	245	193	123	316	2800
	24. Retail Emp. (OCTAM II)	114.00 EMP	9	5	14	57	57	114	2280
	25. Total Emp. (OCTAM II)	503.00 EMP	121	15	136	25	80	105	1685
	SUB-TOTAL		286	453	739	576	432	1008	11065
135	22. SDU (OCTAM II)	296.00 DU	59	178	237	207	118	325	2960
	23. MDU (OCTAM II)	179.00 DU	36	90	126	98	63	161	1432
	24. Retail Emp. (OCTAM II)	103.00 EMP	8	4	12	52	52	104	2060
	25. Total Emp. (OCTAM II)	492.00 EMP	118	15	133	25	79	104	1648
	SUB-TOTAL		221	287	508	382	312	694	8100
136	22. SDU (OCTAM II)	210.00 DU	42	126	168	147	84	231	2100
	23. MDU (OCTAM II)	650.00 DU	130	325	455	358	228	586	5200
	24. Retail Emp. (OCTAM II)	114.00 EMP	9	5	14	57	57	114	2280
	25. Total Emp. (OCTAM II)	503.00 EMP	121	15	136	25	80	105	1685
	SUB-TOTAL		302	471	773	587	449	1036	11265
137	22. SDU (OCTAM II)	430.00 DU	86	258	344	301	172	473	4300
	23. MDU (OCTAM II)	350.00 DU	70	175	245	193	123	316	2800
	24. Retail Emp. (OCTAM II)	114.00 EMP	9	5	14	57	57	114	2280
	25. Total Emp. (OCTAM II)	503.00 EMP	121	15	136	25	80	105	1685
	SUB-TOTAL		286	453	739	576	432	1008	11065
138	22. SDU (OCTAM II)	369.00 DU	74	221	295	258	148	406	3690
	23. MDU (OCTAM II)	392.00 DU	78	196	274	216	137	353	3136
	24. Retail Emp. (OCTAM II)	110.00 EMP	9	4	13	55	55	110	2200
	25. Total Emp. (OCTAM II)	482.00 EMP	116	14	130	24	77	101	1615
	SUB-TOTAL		277	435	712	553	417	970	10641
139	22. SDU (OCTAM II)	277.00 DU	55	166	221	194	111	305	2770
	23. MDU (OCTAM II)	125.00 DU	25	63	88	69	44	113	1000
	24. Retail Emp. (OCTAM II)	50.00 EMP	4	2	6	25	25	50	1000
	25. Total Emp. (OCTAM II)	329.00 EMP	79	10	89	16	53	69	1102
	SUB-TOTAL		163	241	404	304	233	537	5872

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
140	22. SDU (OCTAM II)	92.00 DU	18	55	73	64	37	101	920
	23. MDU (OCTAM II)	98.00 DU	20	49	69	54	34	88	784
	24. Retail Emp. (OCTAM II)	28.00 EMP	2	1	3	14	14	28	560
	25. Total Emp. (OCTAM II)	121.00 EMP	29	4	33	6	19	25	405
	SUB-TOTAL		69	109	178	138	104	242	2669
141	22. SDU (OCTAM II)	295.00 DU	59	177	236	207	118	325	2950
	23. MDU (OCTAM II)	313.00 DU	63	157	220	172	110	282	2504
	24. Retail Emp. (OCTAM II)	88.00 EMP	7	4	11	44	44	88	1760
	25. Total Emp. (OCTAM II)	385.00 EMP	92	12	104	19	62	81	1290
	SUB-TOTAL		221	350	571	442	334	776	8504
142	22. SDU (OCTAM II)	142.00 DU	28	85	113	99	57	156	1420
	23. MDU (OCTAM II)	209.00 DU	42	105	147	115	73	188	1672
	24. Retail Emp. (OCTAM II)	59.00 EMP	5	2	7	30	30	60	1180
	25. Total Emp. (OCTAM II)	257.00 EMP	62	8	70	13	41	54	861
	SUB-TOTAL		137	200	337	257	201	458	5133
143	4. High Residential	629.00 DU	126	252	378	252	189	441	4070
	6. General Commercial	61.26 TSF	51	12	63	50	85	135	1801
	7. Office Commercial	59.07 TSF	109	14	123	19	96	115	906
	SUB-TOTAL		286	278	564	321	370	691	6777
144	1. Low Residential	386.00 DU	89	262	351	297	174	471	3860
	3. Medium Residential	116.00 DU	24	57	81	60	41	101	867
	4. High Residential	500.00 DU	100	200	300	200	100	300	3005
	6. General Commercial	187.86 TSF	156	16	172	69	81	150	1828
	SUB-TOTAL		369	555	924	709	624	1333	10505
145	22. SDU (OCTAM II)	238.00 DU	48	143	191	167	95	262	2380
	23. MDU (OCTAM II)	159.00 DU	32	80	112	87	56	143	1272
	24. Retail Emp. (OCTAM II)	48.00 EMP	4	2	6	24	24	48	960
	25. Total Emp. (OCTAM II)	188.00 EMP	45	6	51	9	30	39	630
	SUB-TOTAL		129	231	360	287	205	492	5242
146	22. SDU (OCTAM II)	195.00 DU	39	117	156	137	78	215	1950
	23. MDU (OCTAM II)	130.00 DU	26	65	91	72	46	118	1040
	24. Retail Emp. (OCTAM II)	40.00 EMP	3	2	5	20	20	40	800
	25. Total Emp. (OCTAM II)	154.00 EMP	37	5	42	8	25	33	516
	SUB-TOTAL		105	189	294	237	169	406	4306
147	1. Low Residential	80.00 DU	18	54	72	62	36	98	800
	SUB-TOTAL		18	54	72	62	36	98	800
148	1. Low Residential	437.00 DU	101	297	398	336	197	533	4370
	3. Medium Residential	152.00 DU	32	74	106	79	53	132	1163
	6. General Commercial	48.46 TSF	40	9	49	39	67	106	1425
	10. Warehouse/Storage	120.00 TSF	22	12	34	6	13	19	450
	SUB-TOTAL		195	392	587	460	330	790	7408

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
149	1. Low Residential	519.00 DU	119	353	472	400	234	634	5190
	2. Low/Medium Residential	129.00 DU	28	76	104	84	52	136	1138
	3. Medium Residential	12.00 DU	3	6	9	6	4	10	92
	4. High Residential	166.00 DU	33	66	99	66	50	116	1074
	6. General Commercial	82.52 TSF	68	16	84	67	114	181	2426
	7. Office Commercial	42.73 TSF	79	10	89	14	69	83	655
	11. Elementary/Middle School	424.00 STU	98	64	162	4	4	8	636
	SUB-TOTAL		428	591	1019	641	527	1168	11211
150	1. Low Residential	122.00 DU	28	83	111	94	55	149	1220
	2. Low/Medium Residential	278.00 DU	61	164	225	181	111	292	2452
	3. Medium Residential	347.00 DU	73	170	243	180	121	301	2655
	4. High Residential	63.00 DU	13	25	38	25	19	44	408
	5. Local Commercial	3.50 TSF	1	1	2	7	7	14	284
	7. Office Commercial	269.87 TSF	497	62	559	89	437	526	4137
	10. Warehouse/Storage	1.95 TSF	0	0	0	0	0	0	7
	15. Hospital	141.00 TSF	117	52	169	68	133	201	2366
	SUB-TOTAL		790	557	1347	644	883	1527	13529
151	1. Low Residential	582.00 DU	134	396	530	448	262	710	5820
	2. Low/Medium Residential	110.00 DU	24	65	89	72	44	116	970
	3. Medium Residential	28.00 DU	6	14	20	15	10	25	214
	6. General Commercial	50.66 TSF	42	10	52	41	70	111	1489
	7. Office Commercial	21.66 TSF	40	5	45	7	35	42	332
	14. Hotel	72.00 ROOM	16	19	35	31	24	55	680
	SUB-TOTAL		262	509	771	614	445	1059	9505
152	1. Low Residential	140.00 DU	32	95	127	108	63	171	1400
	2. Low/Medium Residential	342.00 DU	75	202	277	222	137	359	3016
	3. Medium Residential	669.00 DU	140	328	468	348	234	582	5119
	6. General Commercial	200.85 TSF	167	38	205	163	277	440	5905
	7. Office Commercial	35.86 TSF	66	8	74	12	58	70	550
	SUB-TOTAL		480	671	1151	853	769	1622	15989
153	1. Low Residential	502.00 DU	115	341	456	387	226	613	5020
	2. Low/Medium Residential	109.00 DU	24	64	88	71	44	115	961
	6. General Commercial	133.99 TSF	111	25	136	109	185	294	3939
	7. Office Commercial	6.64 TSF	12	2	14	2	11	13	102
	14. Hotel	126.00 ROOM	28	33	61	54	43	97	1191
	SUB-TOTAL		290	465	755	623	509	1132	11213
154	1. Low Residential	589.00 DU	135	401	536	454	265	719	5890
	4. High Residential	24.00 DU	5	10	15	10	7	17	155
	5. Local Commercial	6.20 TSF	2	1	3	13	13	26	503
	7. Office Commercial	96.68 TSF	178	22	200	32	157	189	1482
	SUB-TOTAL		320	434	754	509	442	951	8030
155	1. Low Residential	599.00 DU	138	407	545	461	270	731	5990

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
155	6. General Commercial	159.76 TSF	133	30	163	129	220	349	4697
	SUB-TOTAL		271	437	708	590	490	1080	10687
156	1. Low Residential	634.00 DU	146	431	577	488	285	773	6340
	6. General Commercial	84.58 TSF	70	16	86	69	117	186	2487
	11. Elementary/Middle School	425.00 STU	98	64	162	4	4	8	638
	SUB-TOTAL		314	511	825	561	406	967	9465
157	1. Low Residential	170.00 DU	39	116	155	131	77	208	1700
	4. High Residential	120.00 DU	24	48	72	48	36	84	776
	6. General Commercial	91.66 TSF	76	17	93	74	126	200	2695
	7. Office Commercial	35.27 TSF	65	8	73	12	57	69	541
	11. Elementary/Middle School	560.00 STU	129	84	213	6	6	12	840
	SUB-TOTAL		333	273	606	271	302	573	6552
158	1. Low Residential	341.00 DU	78	232	310	263	153	416	3410
	6. General Commercial	22.95 TSF	19	4	23	19	32	51	675
	8. Commercial Manufacturing	6.24 TSF	4	1	5	1	3	4	43
	SUB-TOTAL		101	237	338	283	188	471	4128
159	1. Low Residential	765.00 DU	176	520	696	589	344	933	7650
	6. General Commercial	87.83 TSF	73	17	90	71	121	192	2582
	SUB-TOTAL		249	537	786	660	465	1125	10232
160	1. Low Residential	167.00 DU	38	114	152	129	75	204	1570
	2. Low/Medium Residential	14.00 DU	3	8	11	8	5	13	123
	6. General Commercial	10.43 TSF	9	2	11	8	14	22	307
	SUB-TOTAL		50	124	174	146	95	241	2100
161	1. Low Residential	166.00 DU	38	113	151	128	75	203	1660
	2. Low/Medium Residential	13.00 DU	3	8	11	8	5	13	115
	3. Medium Residential	472.00 DU	99	231	330	245	165	410	3611
	6. General Commercial	25.31 TSF	21	5	26	21	35	56	744
	7. Office Commercial	3.68 TSF	7	1	8	1	6	7	56
	10. Warehouse/Storage	1.88 TSF	0	0	0	0	0	0	7
	SUB-TOTAL		168	358	526	403	286	689	6193
162	1. Low Residential	358.00 DU	82	243	325	276	161	437	3580
	6. General Commercial	142.83 TSF	119	27	146	116	197	313	4199
	11. Elementary/Middle School	590.00 STU	136	89	225	6	6	12	885
	SUB-TOTAL		337	359	696	398	364	762	8664
163	1. Low Residential	275.00 DU	63	187	250	212	124	336	2750
	6. General Commercial	164.87 TSF	137	31	168	134	228	362	4847
	SUB-TOTAL		200	218	418	346	352	698	7597
164	1. Low Residential	274.00 DU	63	186	249	211	123	334	2740
	SUB-TOTAL		63	186	249	211	123	334	2740

FVTM EXISTING (1990) ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
165	-- 1. Low Residential	600.00 DU	138	408	546	462	270	732	6000
	6. General Commercial	110.84 TSF	92	21	113	90	153	243	3259
	SUB-TOTAL		230	429	659	552	423	975	9259
166	3. Medium Residential	102.00 DU	21	50	71	53	36	89	780
	SUB-TOTAL		21	50	71	53	36	89	780

FVTM EXISTING (1990) LAND USE AND TRIP GENERATION SUMMARY

Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
1. Low Residential	19875.00 DU	4566	13513	18079	15309	8946	24255	198750
2. Low/Medium Residential	2077.00 DU	457	1225	1682	1350	829	2179	18319
3. Medium Residential	4618.00 DU	969	2264	3233	2401	1617	4018	35328
4. High Residential	3478.00 DU	696	1390	2086	1390	1044	2434	22502
5. Local Commercial	453.95 TSF	134	77	211	935	935	1870	36816
6. General Commercial	7027.12 TSF	5835	1336	7171	5695	9697	15392	206598
7. Office Commercial	1273.32 TSF	2345	293	2638	421	2064	2485	19521
8. Commercial Manufacturing	6814.72 TSF	4701	616	5317	752	3611	4363	47499
10. Warehouse/Storage	985.86 TSF	178	98	276	49	108	157	3697
11. Elementary/Middle School	9776.00 STU	2249	1466	3715	97	97	194	14669
12. High School	4396.00 STU	1319	440	1759	88	176	264	7913
13. Government Office	124.10 TSF	431	74	505	222	598	820	5833
14. Hotel	281.00 ROOM	62	74	136	121	95	216	2655
15. Hospital	804.05 TSF	668	298	966	387	757	1144	13492
16. Church	237.84 TSF	162	162	324	200	138	338	2217
17. Recreation Center	209.09 TSF	316	230	546	189	294	483	4287
18. Golf Course	253.20 ACRE	55	13	68	20	78	98	2109
19. Park	294.73 ACRE	0	0	0	0	0	0	657
20. Agriculture	132.28 ACRE	0	0	0	0	0	0	11
21. Vacant	92.98 ACRE	0	0	0	0	0	0	0
22. SDU (OCTAM II)	6740.00 DU	1349	4044	5393	4718	2696	7414	67400
23. MDU (OCTAM II)	5809.00 DU	1162	2908	4070	3199	2036	5235	46472
24. Retail Emp. (OCTAM II)	1706.00 EMP	137	70	207	857	857	1714	24120
25. Total Emp. (OCTAM II)	6567.00 EMP	1578	198	1776	330	1048	1378	11999
TOTAL		29369	30789	60158	43730	47721	91451	910984

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
1	1. Low Residential	185.00 DU	43	126	169	142	83	225	1850
	SUB-TOTAL		43	126	169	142	83	225	1850
2	1. Low Residential	154.00 DU	35	105	140	119	69	188	1540
	6. General Commercial	20.04 TSF	17	4	21	16	28	44	589
	SUB-TOTAL		52	109	161	135	97	232	2129
3	1. Low Residential	82.00 DU	19	56	75	63	37	100	820
	SUB-TOTAL		19	56	75	63	37	100	820
4	2. Low/Medium Residential	53.00 DU	12	31	43	34	21	55	467
	5. Local Commercial	7.93 TSF	2	1	3	16	16	32	643
	SUB-TOTAL		14	32	46	50	37	87	1110
5	2. Low/Medium Residential	86.00 DU	19	51	70	56	34	90	759
	6. General Commercial	32.67 TSF	27	6	33	26	45	71	960
	SUB-TOTAL		46	57	103	82	79	161	1719
6	6. General Commercial	125.24 TSF	104	24	128	101	173	274	3682
	SUB-TOTAL		104	24	128	101	173	274	3682
7	1. Low Residential	58.00 DU	13	39	52	45	26	71	580
	SUB-TOTAL		13	39	52	45	26	71	580
8	2. Low/Medium Residential	166.00 DU	37	98	135	108	66	174	1464
	5. Local Commercial	67.54 TSF	20	11	31	139	139	278	4477
	19. Park	0.33 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		57	109	166	247	205	452	5942
9	6. General Commercial	332.15 TSF	276	63	339	269	458	727	9765
	SUB-TOTAL		276	63	339	269	458	727	9765
10	6. General Commercial	131.77 TSF	109	25	134	107	182	289	3874
	SUB-TOTAL		109	25	134	107	182	289	3874
11	1. Low Residential	129.00 DU	30	88	118	99	58	157	1290
	SUB-TOTAL		30	88	118	99	58	157	1290
12	5. Local Commercial	49.24 TSF	15	8	23	101	101	202	3993
	SUB-TOTAL		15	8	23	101	101	202	3993
13	1. Low Residential	558.00 DU	128	379	507	430	251	681	5580
	5. Local Commercial	19.97 TSF	6	3	9	41	41	82	1620
	11. Elementary/Middle School	677.00 STU	156	102	258	7	7	14	1016
	19. Park	3.05 ACRE	0	0	0	0	0	0	7
	SUB-TOTAL		290	484	774	478	299	777	8223
14	1. Low Residential	347.00 DU	80	236	316	267	156	423	3470

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
14	11. Elementary/Middle School	790.00 STU	182	119	301	8	8	16	1185
	SUB-TOTAL		262	355	617	275	164	439	4655
15	6. General Commercial	297.30 TSF	247	56	303	241	410	651	8741
	SUB-TOTAL		247	56	303	241	410	651	8741
16	3. Medium Residential	118.00 DU	25	58	83	61	41	102	903
	5. Local Commercial	26.07 TSF	8	4	12	54	54	108	2114
	SUB-TOTAL		33	62	95	115	95	210	3017
17	1. Low Residential	489.00 DU	112	333	445	377	220	597	4890
	11. Elementary/Middle School	478.00 STU	110	72	182	5	5	10	717
	19. Park	3.17 ACRE	0	0	0	0	0	0	7
	SUB-TOTAL		222	405	627	382	225	607	5614
18	6. General Commercial	399.01 TSF	331	76	407	323	551	874	11731
	SUB-TOTAL		331	76	407	323	551	874	11731
19	5. Local Commercial	66.17 TSF	20	11	31	136	136	272	5366
	SUB-TOTAL		20	11	31	136	136	272	5366
20	1. Low Residential	481.00 DU	111	327	438	370	216	586	4810
	11. Elementary/Middle School	209.00 STU	48	31	79	2	2	4	314
	SUB-TOTAL		159	358	517	372	218	590	5124
21	1. Low Residential	106.00 DU	24	72	96	82	48	130	1060
	5. Local Commercial	12.96 TSF	4	2	6	27	27	54	1051
	11. Elementary/Middle School	500.00 STU	115	75	190	5	5	10	750
	SUB-TOTAL		143	149	292	114	80	194	2861
22	18. Golf Course	101.30 ACRE	22	5	27	8	31	39	844
	SUB-TOTAL		22	5	27	8	31	39	844
23	17. Recreation Center	179.69 TSF	271	198	469	162	253	415	3684
	SUB-TOTAL		271	198	469	162	253	415	3684
24	18. Golf Course	151.90 ACRE	33	8	41	12	47	59	1265
	SUB-TOTAL		33	8	41	12	47	59	1265
25	19. Park	70.00 ACRE	0	0	0	0	0	0	156
	SUB-TOTAL		0	0	0	0	0	0	156
26	19. Park	100.00 ACRE	0	0	0	0	0	0	223
	SUB-TOTAL		0	0	0	0	0	0	223
27	1. Low Residential	595.00 DU	137	405	542	458	268	726	5950
	5. Local Commercial	6.86 TSF	2	1	3	14	14	28	556
	11. Elementary/Middle School	442.00 STU	102	66	168	4	4	8	663

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
27	19. Park	2.53 ACRE	0	0	0	0	0	0	6
	SUB-TOTAL		241	472	713	476	286	762	7175
28	1. Low Residential	330.00 DU	76	224	300	254	149	403	3300
	19. Park	2.27 ACRE	0	0	0	0	0	0	5
	SUB-TOTAL		76	224	300	254	149	403	3305
29	6. General Commercial	109.99 TSF	91	21	112	89	152	241	3234
	SUB-TOTAL		91	21	112	89	152	241	3234
30	1. Low Residential	247.00 DU	57	168	225	190	111	301	2470
	11. Elementary/Middle School	482.00 STU	111	72	183	5	5	10	723
	SUB-TOTAL		168	240	408	195	116	311	3193
31	1. Low Residential	365.00 DU	84	248	332	281	164	445	3650
	3. Medium Residential	128.00 DU	27	63	90	67	45	112	979
	4. High Residential	38.00 DU	8	15	23	15	11	26	246
	SUB-TOTAL		119	326	445	363	220	583	4875
32	4. High Residential	121.00 DU	24	48	72	48	36	84	783
	6. General Commercial	113.47 TSF	94	22	116	92	157	249	3336
	SUB-TOTAL		118	70	188	140	193	333	4119
33	12. High School	1840.00 STU	552	184	736	37	74	111	3312
	SUB-TOTAL		552	184	736	37	74	111	3312
34	1. Low Residential	159.00 DU	37	108	145	122	72	194	1590
	SUB-TOTAL		37	108	145	122	72	194	1590
35	1. Low Residential	210.00 DU	48	143	191	162	95	257	2100
	2. Low/Medium Residential	91.00 DU	20	54	74	59	36	95	803
	3. Medium Residential	219.00 DU	46	107	153	114	77	191	1675
	SUB-TOTAL		114	304	418	335	208	543	4578
36	4. High Residential	211.00 DU	42	84	126	84	63	147	1365
	8. Commercial Manufacturing	556.70 TSF	384	50	434	61	295	356	3880
	SUB-TOTAL		426	134	560	145	358	503	5245
37	5. Local Commercial	66.47 TSF	20	11	31	137	137	274	5391
	SUB-TOTAL		20	11	31	137	137	274	5391
38	6. General Commercial	367.43 TSF	305	70	375	298	507	805	10802
	SUB-TOTAL		305	70	375	298	507	805	10802
39	1. Low Residential	145.00 DU	33	99	132	112	65	177	1450
	SUB-TOTAL		33	99	132	112	65	177	1450
40	1. Low Residential	287.00 DU	66	195	261	221	129	350	2870

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
40	11. Elementary/Middle School	963.00 STU	221	144	365	10	10	20	1445
	19. Park	7.25 ACRE	0	0	0	0	0	0	16
	SUB-TOTAL		287	339	626	231	139	370	4331
41	1. Low Residential	128.00 DU	29	87	116	99	58	157	1280
	19. Park	5.58 ACRE	0	0	0	0	0	0	12
	SUB-TOTAL		29	87	116	99	58	157	1292
42	1. Low Residential	382.00 DU	88	260	348	294	172	466	3820
	5. Local Commercial	21.95 TSF	7	4	11	45	45	90	1780
	11. Elementary/Middle School	709.00 STU	163	106	269	7	7	14	1064
	19. Park	5.81 ACRE	0	0	0	0	0	0	13
	SUB-TOTAL		258	370	628	346	224	570	5677
43	2. Low/Medium Residential	86.00 DU	19	51	70	56	34	90	759
	SUB-TOTAL		19	51	70	56	34	90	759
44	6. General Commercial	218.02 TSF	181	41	222	177	301	478	6410
	SUB-TOTAL		181	41	222	177	301	478	6410
45	1. Low Residential	485.00 DU	112	330	442	373	218	591	4850
	19. Park	1.00 ACRE	0	0	0	0	0	0	2
	SUB-TOTAL		112	330	442	373	218	591	4852
46	6. General Commercial	192.97 TSF	160	37	197	156	266	422	5673
	SUB-TOTAL		160	37	197	156	266	422	5673
47	1. Low Residential	286.00 DU	66	194	260	120	129	249	3301
	SUB-TOTAL		66	194	260	120	129	249	3301
48	6. General Commercial	187.74 TSF	156	36	192	152	259	411	5520
	SUB-TOTAL		156	36	192	152	259	411	5520
49	1. Low Residential	249.00 DU	57	169	226	192	112	304	2490
	11. Elementary/Middle School	234.00 STU	54	35	89	2	2	4	351
	19. Park	6.61 ACRE	0	0	0	0	0	0	15
	20. Agriculture	0.88 ACRE	0	0	0	0	0	0	0
	SUB-TOTAL		111	204	315	194	114	308	2856
50	1. Low Residential	378.00 DU	87	257	344	291	170	461	3780
	5. Local Commercial	31.41 TSF	9	5	14	65	65	130	2547
	16. Church	26.40 TSF	18	18	36	22	15	37	246
	19. Park	1.33 ACRE	0	0	0	0	0	0	3
	SUB-TOTAL		114	280	394	378	250	628	6576
51	4. High Residential	292.00 DU	58	117	175	117	88	205	1889
	SUB-TOTAL		58	117	175	117	88	205	1889

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
52	6. General Commercial	381.15 TSF	316	72	388	309	526	835	11206
	SUB-TOTAL		316	72	388	309	526	835	11206
53	4. High Residential	223.00 DU	45	89	134	89	67	156	1443
	5. Local Commercial	26.22 TSF	8	4	12	54	54	108	2126
	SUB-TOTAL		53	93	146	143	121	264	3569
54	6. General Commercial	41.16 TSF	34	8	42	33	57	90	1210
	12. High School	2556.00 STU	767	256	1023	51	102	153	4601
	16. Church	42.73 TSF	29	29	58	36	25	61	398
	SUB-TOTAL		830	293	1123	120	184	304	6209
55	1. Low Residential	238.00 DU	55	162	217	183	107	290	2380
	6. General Commercial	18.08 TSF	15	3	18	15	25	40	532
	16. Church	38.29 TSF	26	26	52	32	22	54	357
	SUB-TOTAL		96	191	287	230	154	384	3269
56	6. General Commercial	165.31 TSF	137	31	168	134	228	362	4860
	SUB-TOTAL		137	31	168	134	228	362	4860
57	6. General Commercial	353.27 TSF	293	67	360	286	488	774	10386
	SUB-TOTAL		293	67	360	286	488	774	10386
58	6. General Commercial	542.32 TSF	450	103	553	439	748	1187	15944
	SUB-TOTAL		450	103	553	439	748	1187	15944
59	1. Low Residential	104.00 DU	24	71	95	80	37	37	1040
	4. High Residential	726.00 DU	145	290	435	290	218	508	4197
	SUB-TOTAL		169	361	530	370	255	545	5237
60	1. Low Residential	88.00 DU	20	60	80	68	40	108	880
	3. Medium Residential	106.00 DU	22	52	74	55	37	92	811
	4. High Residential	421.00 DU	84	168	252	168	126	294	2724
	19. Park	0.69 ACRE	0	0	0	0	0	0	2
	SUB-TOTAL		126	280	406	291	203	494	4417
61	6. General Commercial	209.31 TSF	174	40	214	170	289	459	6154
	13. Government Office	124.10 TSF	431	74	505	222	598	820	5833
	SUB-TOTAL		605	114	719	392	887	1279	11987
62	1. Low Residential	43.00 DU	10	29	39	33	19	52	430
	5. Local Commercial	120.60 TSF	36	21	57	248	248	496	9781
	SUB-TOTAL		46	50	96	281	267	548	10211
63	1. Low Residential	369.00 DU	85	251	336	284	166	450	3690
	SUB-TOTAL		85	251	336	284	166	450	3690
64	6. General Commercial	183.39 TSF	152	35	187	149	253	402	5392
	SUB-TOTAL		152	35	187	149	253	402	5392

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone		Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
65	1.	Low Residential	78.00 DU	18	53	71	60	35	95	780
		SUB-TOTAL		18	53	71	60	35	95	780
66	5.	Local Commercial	107.18 TSF	32	18	50	221	221	442	8692
	11.	Elementary/Middle School	445.00 STU	102	67	169	4	4	8	668
	16.	Church	65.34 TSF	45	45	90	55	38	93	609
		SUB-TOTAL		179	130	309	280	263	543	9969
67	6.	General Commercial	202.99 TSF	168	39	207	164	280	444	5968
		SUB-TOTAL		168	39	207	164	280	444	5968
68	1.	Low Residential	373.00 DU	86	254	340	287	168	455	3730
	2.	Low/Medium Residential	86.00 DU	19	51	70	56	34	90	759
	19.	Park	0.98 ACRE	0	0	0	0	0	0	2
		SUB-TOTAL		105	305	410	343	202	545	4491
69	1.	Low Residential	326.00 DU	75	222	297	251	147	398	3260
	2.	Low/Medium Residential	258.00 DU	57	152	209	168	103	271	2276
	11.	Elementary/Middle School	677.00 STU	156	102	258	7	7	14	1016
	16.	Church	33.98 TSF	23	23	46	29	20	49	317
	17.	Recreation Center	22.87 TSF	35	25	60	21	32	53	469
	19.	Park	2.90 ACRE	0	0	0	0	0	0	6
		SUB-TOTAL		346	524	870	476	309	785	7344
70	1.	Low Residential	79.00 DU	18	54	72	61	36	97	790
		SUB-TOTAL		18	54	72	61	36	97	790
71	1.	Low Residential	69.00 DU	16	47	63	53	31	84	690
	5.	Local Commercial	17.23 TSF	5	3	8	35	35	70	1397
		SUB-TOTAL		21	50	71	88	66	154	2087
72	7.	Office Commercial	164.44 TSF	303	38	341	54	266	320	2521
	15.	Hospital	550.38 TSF	457	204	661	264	517	781	9235
		SUB-TOTAL		760	242	1002	318	783	1101	11756
73	7.	Office Commercial	140.26 TSF	258	32	290	46	227	273	2150
	15.	Hospital	157.80 TSF	131	58	189	76	148	224	2648
		SUB-TOTAL		389	90	479	122	375	497	4798
74	7.	Office Commercial	111.08 TSF	204	26	230	37	180	217	1703
	8.	Commercial Manufacturing	347.61 TSF	240	31	271	38	184	222	2423
		SUB-TOTAL		444	57	501	75	364	439	4126
75	3.	Medium Residential	230.00 DU	48	113	161	120	81	201	1760
	8.	Commercial Manufacturing	493.71 TSF	341	44	385	54	262	316	3441
		SUB-TOTAL		389	157	546	174	343	517	5201
76	8.	Commercial Manufacturing	873.73 TSF	603	79	682	96	463	559	6090
		SUB-TOTAL		603	79	682	96	463	559	6090

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
77	7. Office Commercial	241.32 TSF	444	56	500	80	391	471	3699
	8. Commercial Manufacturing	117.61 TSF	81	11	92	13	62	75	820
	17. Recreation Center	6.53 TSF	10	7	17	6	9	15	134
	SUB-TOTAL		535	74	609	99	462	561	4653
78	1. Low Residential	15.00 DU	3	10	13	12	7	19	150
	8. Commercial Manufacturing	682.41 TSF	471	61	532	75	362	437	4756
	SUB-TOTAL		474	71	545	87	369	456	4906
79	8. Commercial Manufacturing	715.34 TSF	494	64	558	79	379	458	4986
	SUB-TOTAL		494	64	558	79	379	458	4986
80	7. Office Commercial	468.66 TSF	862	108	970	155	759	914	7185
	SUB-TOTAL		862	108	970	155	759	914	7185
81	7. Office Commercial	512.27 TSF	943	118	1061	169	830	999	7853
	SUB-TOTAL		943	118	1061	169	830	999	7853
82	7. Office Commercial	162.78 TSF	300	37	337	54	264	318	2495
	SUB-TOTAL		300	37	337	54	264	318	2495
83	7. Office Commercial	386.20 TSF	711	89	800	127	626	753	5920
	8. Commercial Manufacturing	322.95 TSF	223	29	252	36	171	207	2251
	SUB-TOTAL		934	118	1052	163	797	960	8171
84	8. Commercial Manufacturing	306.58 TSF	212	28	240	34	162	196	2137
	SUB-TOTAL		212	28	240	34	162	196	2137
85	6. General Commercial	286.92 TSF	238	55	293	232	396	628	8435
	8. Commercial Manufacturing	246.74 TSF	170	22	192	27	131	158	1720
	SUB-TOTAL		408	77	485	259	527	786	10155
86	2. Low/Medium Residential	79.00 DU	17	47	64	51	32	83	697
	SUB-TOTAL		17	47	64	51	32	83	697
87	1. Low Residential	274.00 DU	63	186	249	211	123	334	2740
	11. Elementary/Middle School	623.00 STU	143	93	236	6	6	12	935
	SUB-TOTAL		206	279	485	217	129	346	3675
88	6. General Commercial	120.01 TSF	100	23	123	97	166	263	3528
	SUB-TOTAL		100	23	123	97	166	263	3528
89	1. Low Residential	306.00 DU	70	208	278	236	138	374	3060
	5. Local Commercial	48.48 TSF	15	8	23	100	100	200	3932
	19. Park	2.89 ACRE	0	0	0	0	0	0	6
	SUB-TOTAL		85	216	301	336	238	574	6998
90	3. Medium Residential	379.00 DU	80	186	266	197	133	330	2899
	SUB-TOTAL		80	186	266	197	133	330	2899

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
91	1. Low Residential	55.00 DU	13	37	50	42	25	67	550
	5. Local Commercial	14.48 TSF	4	2	6	30	30	60	1174
	16. Church	31.10 TSF	21	21	42	26	18	44	290
	SUB-TOTAL		38	60	98	98	73	171	2014
92	1. Low Residential	162.00 DU	37	110	147	125	73	198	1620
	SUB-TOTAL		37	110	147	125	73	198	1620
93	1. Low Residential	140.00 DU	32	95	127	108	63	171	1400
	19. Park	2.03 ACRE	0	0	0	0	0	0	5
	SUB-TOTAL		32	95	127	108	63	171	1405
94	1. Low Residential	432.00 DU	99	294	393	333	194	527	4320
	6. General Commercial	36.81 TSF	31	7	38	30	51	81	1082
	19. Park	70.09 ACRE	0	0	0	0	0	0	156
	SUB-TOTAL		130	301	431	363	245	608	5558
95	1. Low Residential	295.00 DU	68	201	269	227	133	360	2950
	SUB-TOTAL		68	201	269	227	133	360	2950
96	6. General Commercial	135.04 TSF	112	26	138	109	186	295	3970
	SUB-TOTAL		112	26	138	109	186	295	3970
97	1. Low Residential	295.00 DU	68	201	269	227	133	360	2950
	19. Park	4.33 ACRE	0	0	0	0	0	0	10
	SUB-TOTAL		68	201	269	227	133	360	2960
98	1. Low Residential	80.00 DU	21	61	82	69	41	110	800
	5. Local Commercial	21.34 TSF	6	4	10	44	44	88	1731
	SUB-TOTAL		27	65	92	113	85	198	2531
99	2. Low/Medium Residential	150.00 DU	33	88	121	98	60	158	1323
	6. General Commercial	185.35 TSF	154	35	189	150	256	406	5449
	Hospital	134.62 TSF	112	50	162	65	127	192	2259
	SUB-TOTAL		299	173	472	313	443	756	9031
100	1. Low Residential	252.00 DU	58	171	229	194	113	307	2520
	3. Medium Residential	373.00 DU	78	183	261	194	131	325	2853
	5. Local Commercial	21.34 TSF	6	4	10	44	44	88	1731
	SUB-TOTAL		142	358	500	432	288	720	7104
101	6. General Commercial	385.07 TSF	320	73	393	312	531	843	11321
	SUB-TOTAL		320	73	393	312	531	843	11321
102	1. Low Residential	227.00 DU	52	154	206	175	102	277	2270
	2. Low/Medium Residential	93.00 DU	20	55	75	50	37	97	920
	5. Local Commercial	28.36 TSF	9	5	14	58	58	116	2300
	11. Elementary/Middle School	649.00 STU	149	97	246	6	6	12	974
	SUB-TOTAL		230	311	541	299	203	502	6364

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
103	6. General Commercial	287.71 TSF	239	55	294	233	397	630	8459
	SUB-TOTAL		239	55	294	233	397	630	8459
104	1. Low Residential	130.00 DU	30	88	118	100	59	159	1300
	SUB-TOTAL		30	88	118	100	59	159	1300
105	6. General Commercial	154.86 TSF	129	29	158	125	214	339	4553
	SUB-TOTAL		129	29	158	125	214	339	4553
106	6. General Commercial	193.62 TSF	161	37	198	157	267	424	5692
	SUB-TOTAL		161	37	198	157	267	424	5692
107	3. Medium Residential	1086.00 DU	228	532	760	565	380	945	8308
	SUB-TOTAL		228	532	760	565	380	945	8308
108	7. Office Commercial	80.80 TSF	149	19	168	27	131	158	1239
	SUB-TOTAL		149	19	168	27	131	158	1239
109	6. General Commercial	176.64 TSF	147	34	181	143	244	387	5193
	SUB-TOTAL		147	34	181	143	244	387	5193
110	1. Low Residential	362.00 DU	83	246	329	279	163	442	3620
	19. Park	2.89 ACRE	0	0	0	0	0	0	6
	SUB-TOTAL		83	246	329	279	163	442	3626
111	2. Low/Medium Residential	65.00 DU	14	38	52	42	26	68	570
	6. General Commercial	20.91 TSF	17	4	21	17	19	36	418
	SUB-TOTAL		31	42	73	59	45	104	988
112	6. General Commercial	281.83 TSF	234	54	288	228	389	617	8286
	SUB-TOTAL		234	54	288	228	389	617	8286
113	1. Low Residential	641.00 DU	147	436	583	494	288	782	6410
	8. Commercial Manufacturing	226.34 TSF	156	20	176	25	120	145	1578
	11. Elementary/Middle School	689.00 STU	158	103	261	7	7	14	1034
	SUB-TOTAL		461	559	1020	526	415	941	9022
114	7. Office Commercial	111.08 TSF	204	26	230	37	180	217	1703
	8. Commercial Manufacturing	317.81 TSF	219	29	248	35	168	203	2215
	SUB-TOTAL		423	55	478	72	348	420	3918
115	8. Commercial Manufacturing	551.21 TSF	380	50	430	61	292	353	3842
	SUB-TOTAL		380	50	430	61	292	353	3842
116	8. Commercial Manufacturing	772.32 TSF	533	70	603	85	409	494	5383
	SUB-TOTAL		533	70	603	85	409	494	5383
117	8. Commercial Manufacturing	382.63 TSF	264	34	298	42	203	245	2667
	SUB-TOTAL		264	34	298	42	203	245	2667

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
118	8. Commercial Manufacturing	589.63 TSF	407	53	460	65	313	378	4110
	SUB-TOTAL		407	53	460	65	313	378	4110
119	8. Commercial Manufacturing	1024.79 TSF	707	92	799	113	543	656	7143
	SUB-TOTAL		707	92	799	113	543	656	7143
120	8. Commercial Manufacturing	490.05 TSF	338	44	382	54	260	314	3416
	10. Warehouse/Storage	714.62 TSF	129	71	200	36	79	115	2680
	SUB-TOTAL		467	115	582	90	339	429	5096
121	3. Medium Residential	149.00 DU	31	73	104	77	52	129	1140
	SUB-TOTAL		31	73	104	77	52	129	1140
122	8. Commercial Manufacturing	235.22 TSF	162	21	183	26	125	151	1639
	SUB-TOTAL		162	21	183	26	125	151	1639
123	22. SDU (OCTAM II)	530.00 DU	106	318	424	371	212	583	5300
	23. MDU (OCTAM II)	378.00 DU	76	189	265	208	132	340	3024
	24. Retail Emp. (OCTAM II)	238.00 EMP	19	10	29	119	119	238	4760
	25. Total Emp. (OCTAM II)	746.00 EMP	179	22	201	37	119	156	2499
	SUB-TOTAL		380	539	919	735	582	1317	15583
124	22. SDU (OCTAM II)	364.00 DU	73	218	291	255	146	401	3640
	23. MDU (OCTAM II)	355.00 DU	71	178	249	195	124	319	2840
	24. Retail Emp. (OCTAM II)	137.00 EMP	11	5	16	69	69	138	2740
	25. Total Emp. (OCTAM II)	163.00 EMP	39	5	44	8	26	34	546
	SUB-TOTAL		194	406	600	527	365	892	9766
125	22. SDU (OCTAM II)	530.00 DU	106	318	424	371	212	583	5300
	23. MDU (OCTAM II)	378.00 DU	76	189	265	208	132	340	3024
	24. Retail Emp. (OCTAM II)	238.00 EMP	19	10	29	119	119	238	4760
	25. Total Emp. (OCTAM II)	746.00 EMP	179	22	201	37	119	156	2499
	SUB-TOTAL		380	539	919	735	582	1317	15583
126	22. SDU (OCTAM II)	364.00 DU	73	218	291	255	146	401	3640
	23. MDU (OCTAM II)	355.00 DU	71	178	249	195	124	319	2840
	24. Retail Emp. (OCTAM II)	137.00 EMP	11	5	16	69	69	138	2740
	25. Total Emp. (OCTAM II)	163.00 EMP	39	5	44	8	26	34	546
	SUB-TOTAL		194	406	600	527	365	892	9766
127	22. SDU (OCTAM II)	189.00 DU	38	113	151	132	76	208	1890
	23. MDU (OCTAM II)	1030.00 DU	206	515	721	567	361	928	8240
	24. Retail Emp. (OCTAM II)	82.00 EMP	7	3	10	41	41	82	1640
	25. Total Emp. (OCTAM II)	416.00 EMP	100	12	112	21	67	88	1394
	SUB-TOTAL		351	643	994	761	545	1306	13164
128	22. SDU (OCTAM II)	396.00 DU	79	238	317	277	158	435	3960
	24. Retail Emp. (OCTAM II)	57.00 EMP	5	2	7	29	29	58	1140

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
128	25. Total Emp. (OCTAM II)	291.00 EMP	70	9	79	15	47	62	975
	SUB-TOTAL		154	249	403	321	234	555	6075
129	22. SDU (OCTAM II)	169.00 DU	34	101	135	118	68	186	1690
	24. Retail Emp. (OCTAM II)	25.00 EMP	2	1	3	13	13	26	500
	25. Total Emp. (OCTAM II)	125.00 EMP	30	4	34	6	20	26	419
	SUB-TOTAL		66	106	172	137	101	238	2609
130	22. SDU (OCTAM II)	189.00 DU	38	113	151	132	76	208	1890
	23. MDU (OCTAM II)	1030.00 DU	206	515	721	567	361	928	8240
	24. Retail Emp. (OCTAM II)	82.00 EMP	7	3	10	41	41	82	1640
	25. Total Emp. (OCTAM II)	416.00 EMP	100	12	112	21	67	88	1394
	SUB-TOTAL		351	643	994	761	545	1306	13164
131	22. SDU (OCTAM II)	326.00 DU	65	196	261	228	130	358	3260
	24. Retail Emp. (OCTAM II)	82.00 EMP	7	3	10	41	41	82	1640
	25. Total Emp. (OCTAM II)	416.00 EMP	100	12	112	21	67	88	1394
	SUB-TOTAL		172	211	383	290	238	528	6294
132	22. SDU (OCTAM II)	512.00 DU	102	307	409	358	205	563	5120
	23. MDU (OCTAM II)	416.00 DU	83	208	291	229	146	375	3328
	24. Retail Emp. (OCTAM II)	40.00 EMP	3	2	5	20	20	40	800
	25. Total Emp. (OCTAM II)	143.00 EMP	34	4	38	7	23	30	479
	SUB-TOTAL		222	521	743	614	394	1008	9727
133	22. SDU (OCTAM II)	337.00 DU	67	202	269	136	135	271	1370
	24. Retail Emp. (OCTAM II)	20.00 EMP	2	1	3	10	10	20	400
	25. Total Emp. (OCTAM II)	123.00 EMP	30	4	34	6	20	26	412
	SUB-TOTAL		99	207	306	252	165	417	4182
134	22. SDU (OCTAM II)	440.00 DU	88	264	352	308	176	484	4400
	23. MDU (OCTAM II)	500.00 DU	100	250	350	275	175	450	4000
	24. Retail Emp. (OCTAM II)	144.00 EMP	12	6	18	72	72	144	2880
	25. Total Emp. (OCTAM II)	624.00 EMP	150	19	169	31	100	131	2090
	SUB-TOTAL		350	539	889	686	523	1209	13370
135	22. SDU (OCTAM II)	306.00 DU	61	184	245	214	122	336	3060
	23. MDU (OCTAM II)	329.00 DU	66	165	231	181	115	296	2632
	24. Retail Emp. (OCTAM II)	133.00 EMP	11	5	16	67	67	134	2660
	25. Total Emp. (OCTAM II)	613.00 EMP	147	18	165	31	98	129	2054
	SUB-TOTAL		285	372	657	493	402	895	10406
136	22. SDU (OCTAM II)	220.00 DU	44	132	176	154	88	242	2200
	23. MDU (OCTAM II)	924.00 DU	185	462	647	508	323	831	7392
	24. Retail Emp. (OCTAM II)	144.00 EMP	12	6	18	72	72	144	2880
	25. Total Emp. (OCTAM II)	624.00 EMP	150	19	169	31	100	131	2090
	SUB-TOTAL		391	619	1010	765	583	1348	14562

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
137	22. SDU (OCTAM II)	440.00 DU	88	264	352	308	176	484	4400
	23. MDU (OCTAM II)	500.00 DU	100	250	350	275	175	450	4000
	24. Retail Emp. (OCTAM II)	144.00 EMP	12	6	18	72	72	144	2880
	25. Total Emp. (OCTAM II)	624.00 EMP	150	19	169	31	100	131	2090
	SUB-TOTAL		350	539	889	686	523	1209	13370
138	22. SDU (OCTAM II)	379.00 DU	76	227	303	265	152	417	3790
	23. MDU (OCTAM II)	701.00 DU	140	351	491	386	245	631	5608
	24. Retail Emp. (OCTAM II)	173.00 EMP	14	7	21	87	87	174	3460
	25. Total Emp. (OCTAM II)	749.00 EMP	180	22	202	37	120	157	2509
	SUB-TOTAL		410	607	1017	775	604	1379	15367
139	22. SDU (OCTAM II)	284.00 DU	57	170	227	199	114	313	2840
	23. MDU (OCTAM II)	356.00 DU	71	178	249	196	125	321	2848
	24. Retail Emp. (OCTAM II)	96.00 EMP	8	4	12	48	48	96	1920
	25. Total Emp. (OCTAM II)	528.00 EMP	127	16	143	26	84	110	1769
	SUB-TOTAL		263	368	631	469	371	840	9377
140	22. SDU (OCTAM II)	95.00 DU	19	57	76	67	38	105	950
	23. MDU (OCTAM II)	175.00 DU	35	88	123	96	61	157	1400
	24. Retail Emp. (OCTAM II)	43.00 EMP	3	2	5	22	22	44	860
	25. Total Emp. (OCTAM II)	187.00 EMP	45	6	51	9	30	39	626
	SUB-TOTAL		102	153	255	194	151	345	3836
141	22. SDU (OCTAM II)	303.00 DU	61	182	243	212	121	333	3030
	23. MDU (OCTAM II)	560.00 DU	112	280	392	308	196	504	4480
	24. Retail Emp. (OCTAM II)	138.00 EMP	11	6	17	69	69	138	2760
	25. Total Emp. (OCTAM II)	599.00 EMP	144	18	162	30	46	126	1007
	SUB-TOTAL		328	486	814	619	432	1051	11277
142	22. SDU (OCTAM II)	147.00 DU	29	88	117	103	59	162	1470
	23. MDU (OCTAM II)	374.00 DU	75	187	262	206	131	337	2992
	24. Retail Emp. (OCTAM II)	92.00 EMP	7	4	11	46	46	92	1840
	25. Total Emp. (OCTAM II)	399.00 EMP	96	12	108	20	64	84	1337
	SUB-TOTAL		207	291	498	375	300	675	7639
143	4. High Residential	629.00 DU	126	252	378	252	189	441	4070
	6. General Commercial	61.26 TSF	51	12	63	50	85	135	1801
	7. Office Commercial	59.07 TSF	109	14	123	19	96	115	906
	SUB-TOTAL		286	278	564	321	370	691	6777
144	1. Low Residential	386.00 DU	89	262	351	297	174	471	3860
	3. Medium Residential	116.00 DU	24	57	81	60	41	101	887
	4. High Residential	500.00 DU	100	200	300	200	150	350	3235
	6. General Commercial	187.86 TSF	156	36	192	152	259	411	5523
	SUB-TOTAL		369	555	924	709	624	1333	13505
145	22. SDU (OCTAM II)	245.00 DU	49	147	196	172	98	270	2450

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
145	23. MDU (OCTAM II)	222.00 DU	44	111	155	122	78	200	1776
	24. Retail Emp. (OCTAM II)	116.00 EMP	9	5	14	58	58	116	2320
	25. Total Emp. (OCTAM II)	342.00 EMP	82	10	92	17	55	72	1146
	SUB-TOTAL		184	273	457	369	289	658	7692
146	22. SDU (OCTAM II)	200.00 DU	40	120	160	140	80	220	2000
	23. MDU (OCTAM II)	182.00 DU	36	91	127	100	64	164	1456
	24. Retail Emp. (OCTAM II)	94.00 EMP	8	4	12	47	47	94	1880
	25. Total Emp. (OCTAM II)	279.00 EMP	67	8	75	14	45	59	935
	SUB-TOTAL		151	223	374	301	236	537	6271
147	1. Low Residential	80.00 DU	18	54	72	62	36	98	800
	SUB-TOTAL		18	54	72	62	36	98	800
148	1. Low Residential	437.00 DU	101	297	398	336	197	533	4370
	3. Medium Residential	152.00 DU	32	74	106	79	53	132	1163
	6. General Commercial	48.46 TSF	40	9	49	39	67	106	1425
	10. Warehouse/Storage	120.00 TSF	22	12	34	6	13	19	450
	SUB-TOTAL		195	392	587	460	330	790	7408
149	1. Low Residential	519.00 DU	119	353	472	400	234	634	5190
	2. Low/Medium Residential	129.00 DU	28	76	104	84	52	136	1138
	3. Medium Residential	12.00 DU	3	6	9	6	4	10	82
	4. High Residential	166.00 DU	33	66	99	66	50	116	1074
	6. General Commercial	82.52 TSF	68	16	84	67	114	181	2426
	7. Office Commercial	42.73 TSF	79	10	89	14	69	83	855
	11. Elementary/Middle School	424.00 STU	98	64	162	4	1	5	836
	SUB-TOTAL		428	591	1019	641	527	1168	11211
150	1. Low Residential	122.00 DU	28	83	111	94	55	149	1220
	2. Low/Medium Residential	278.00 DU	61	164	225	181	111	292	2452
	3. Medium Residential	347.00 DU	73	170	243	180	121	301	2655
	4. High Residential	63.00 DU	13	25	38	25	19	44	408
	5. Local Commercial	3.50 TSF	1	1	2	7	7	14	284
	7. Office Commercial	269.87 TSF	497	62	559	89	437	526	4137
	10. Warehouse/Storage	1.95 TSF	0	0	0	0	0	0	7
	15. Hospital	141.00 TSF	117	52	169	68	133	201	2366
	SUB-TOTAL		790	557	1347	644	883	1527	13529
151	1. Low Residential	582.00 DU	134	396	530	448	262	710	5820
	2. Low/Medium Residential	110.00 DU	24	65	89	72	44	116	970
	3. Medium Residential	28.00 DU	6	14	20	15	10	25	214
	6. General Commercial	50.66 TSF	42	10	52	41	70	111	1489
	7. Office Commercial	21.66 TSF	40	5	45	7	35	42	332
	14. Hotel	72.00 ROOM	16	19	35	31	24	55	680
	SUB-TOTAL		262	509	771	614	445	1059	9505
152	1. Low Residential	140.00 DU	32	95	127	108	63	171	1400

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
152	2. Low/Medium Residential	342.00 DU	75	202	277	222	137	359	3016
	3. Medium Residential	669.00 DU	140	328	468	348	234	582	5118
	6. General Commercial	200.85 TSF	167	38	205	163	277	440	5905
	7. Office Commercial	35.86 TSF	66	8	74	12	58	70	550
	SUB-TOTAL		480	671	1151	853	769	1622	15989
153	1. Low Residential	502.00 DU	115	341	456	387	226	613	5020
	2. Low/Medium Residential	109.00 DU	24	64	88	71	44	115	961
	6. General Commercial	133.99 TSF	111	25	136	109	185	294	3939
	7. Office Commercial	6.64 TSF	12	2	14	2	11	13	102
	14. Hotel	126.00 ROOM	28	33	61	54	43	97	1191
	SUB-TOTAL		290	465	755	623	509	1132	11213
154	1. Low Residential	589.00 DU	135	401	536	454	265	719	5890
	4. High Residential	24.00 DU	5	10	15	10	7	17	155
	5. Local Commercial	6.20 TSF	2	1	3	13	13	26	503
	7. Office Commercial	96.68 TSF	178	22	200	32	157	189	1482
	SUB-TOTAL		320	434	754	509	442	951	8030
155	1. Low Residential	599.00 DU	138	407	545	461	270	731	5990
	6. General Commercial	159.76 TSF	133	30	163	129	220	349	4697
	SUB-TOTAL		271	437	708	590	490	1080	10687
156	1. Low Residential	634.00 DU	146	431	577	488	285	773	6340
	6. General Commercial	84.58 TSF	70	16	86	69	117	186	2487
	11. Elementary/Middle School	425.00 STU	98	64	162	4	4	8	838
	SUB-TOTAL		314	511	825	561	406	967	9665
157	1. Low Residential	170.00 DU	39	116	155	131	77	208	1700
	4. High Residential	120.00 DU	24	48	72	48	16	64	776
	6. General Commercial	91.66 TSF	76	17	93	74	126	200	2695
	7. Office Commercial	35.27 TSF	65	8	73	12	57	69	541
	11. Elementary/Middle School	560.00 STU	129	84	213	6	6	12	840
	SUB-TOTAL		333	273	606	271	302	573	6552
158	1. Low Residential	341.00 DU	78	232	310	263	153	416	3410
	6. General Commercial	22.95 TSF	19	4	23	19	32	51	675
	8. Commercial Manufacturing	6.24 TSF	4	1	5	1	3	4	43
	SUB-TOTAL		101	237	338	283	188	471	4128
159	1. Low Residential	765.00 DU	176	520	696	589	344	933	7650
	6. General Commercial	87.83 TSF	73	17	90	71	121	192	2582
	SUB-TOTAL		249	537	786	660	465	1125	10232
160	1. Low Residential	167.00 DU	38	114	152	129	75	204	1670
	2. Low/Medium Residential	14.00 DU	3	8	11	9	6	15	123
	6. General Commercial	10.43 TSF	9	2	11	8	14	22	307
	SUB-TOTAL		50	124	174	146	95	241	2100

FVTM POST-2010 PROPOSED GENERAL PLAN ZONAL LAND USE AND TRIP GENERATION (cont.)

Zone	Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
161	1. Low Residential	166.00 DU	38	113	151	128	75	203	1660
	2. Low/Medium Residential	13.00 DU	3	8	11	8	5	13	115
	3. Medium Residential	472.00 DU	99	231	330	245	165	410	3611
	6. General Commercial	25.31 TSF	21	5	26	21	35	56	744
	7. Office Commercial	3.68 TSF	7	1	8	1	6	7	56
	10. Warehouse/Storage	1.88 TSF	0	0	0	0	0	0	7
	SUB-TOTAL		168	358	526	403	286	689	6193
162	1. Low Residential	358.00 DU	82	243	325	276	161	437	3580
	6. General Commercial	142.83 TSF	119	27	146	116	197	313	4199
	11. Elementary/Middle School	590.00 STU	136	89	225	6	6	12	885
	SUB-TOTAL		337	359	696	398	364	762	8664
163	1. Low Residential	275.00 DU	63	187	250	212	124	336	2750
	6. General Commercial	164.87 TSF	137	31	168	134	228	362	4847
	SUB-TOTAL		200	218	418	346	352	698	7597
164	1. Low Residential	274.00 DU	63	186	249	211	123	334	2740
	SUB-TOTAL		63	186	249	211	123	334	2740
165	1. Low Residential	600.00 DU	138	408	546	462	270	732	6000
	6. General Commercial	110.84 TSF	92	21	113	90	153	243	3259
	SUB-TOTAL		230	429	659	552	423	975	9259
166	3. Medium Residential	102.00 DU	21	50	71	53	36	89	780
	SUB-TOTAL		21	50	71	53	36	89	780

FVTM POST-2010 PROPOSED GENERAL PLAN LAND USE AND TRIP GENERATION SUMMARY

Land Use Type	Units	-- AM Peak Hour -- In	Out	Total	-- PM Peak Hour -- In	Out	Total	ADT
1. Low Residential	19984.00 DU	4593	13588	18181	15391	8996	24387	199840
2. Low/Medium Residential	2208.00 DU	485	1303	1788	1435	882	2317	19475
3. Medium Residential	4686.00 DU	983	2297	3280	2436	1641	4077	35848
4. High Residential	3534.00 DU	707	1412	2119	1412	1060	2472	22865
5. Local Commercial	791.50 TSF	237	132	369	1629	1629	3258	64189
6. General Commercial	8556.21 TSF	7103	1627	8730	6931	11809	18740	251552
7. Office Commercial	2950.35 TSF	5431	681	6112	974	4780	5754	45229
8. Commercial Manufacturing	9259.62 TSF	6389	833	7222	1020	4907	5927	64540
10. Warehouse/Storage	838.45 TSF	151	83	234	42	92	134	3144
11. Elementary/Middle School	10566.00 STU	2431	1585	4016	105	105	210	15854
12. High School	4396.00 STU	1319	440	1759	88	176	264	7913
13. Government Office	124.10 TSF	431	74	505	222	598	820	5833
14. Hotel	198.00 ROOM	44	52	96	85	67	152	1871
15. Hospital	983.80 TSF	817	364	1181	473	925	1398	16508
16. Church	237.84 TSF	162	162	324	200	138	338	2217
17. Recreation Center	209.09 TSF	316	230	546	189	294	483	4287
18. Golf Course	253.20 ACRE	55	13	68	20	78	98	2109
19. Park	295.73 ACRE	0	0	0	0	0	0	659
20. Agriculture	0.88 ACRE	0	0	0	0	0	0	0
22. SDU (OCTAM II)	6965.00 DU	1393	4177	5570	4875	2788	7663	69650
23. MDU (OCTAM II)	8765.00 DU	1753	4385	6138	4822	3068	7890	70120
24. Retail Emp. (OCTAM II)	2455.00 EMP	200	100	300	1231	1231	2462	49100
25. Total Emp. (OCTAM II)	9316.00 EMP	2238	278	2516	464	1493	1957	21210
TOTAL		37238	33816	71054	44044	46757	90801	884013

APPENDIX B

INTERSECTION CAPACITY UTILIZATION WORKSHEETS

Peak hour intersection volume/capacity (V/C) ratios are calculated by means of intersection capacity utilization (ICU) values. ICU calculations were performed for the intersections shown in Figure B-1. The procedure is based on the critical movement methodology, and shows the amount of capacity utilized by each critical move. Consistent with the city's guidelines for preparing ICU calculations, a capacity of 1700 vehicles per hour (VPH) per lane is assumed together with a .05 clearance interval.

The methodology also incorporates a check for right-turn capacity utilization. Both right-turn-on-green (RTOG) and right-turn-on-red (RTOR) capacity availability are calculated and checked against the total right-turn capacity need. If insufficient capacity is available, then an adjustment is made to the total capacity utilization value. The following example shows how this adjustment is made.

Example For Northbound Right

1. Right-Turn-On-Green (RTOG)

If NBT is critical move, then:

RTOG = V/C (NBT)

Otherwise,

RTOG = V/C (NBL) + V/C (SBT) - V/C (SBL)

2. Right-Turn-On-Red (RTOR)

If WBL is critical move, then:

RTOR = V/C (WBL)

Otherwise,

RTOR = V/C (EBL) + V/C (WBT) - V/C (EBT)

3. Right-Turn Overlap Adjustment

If the northbound right is assumed to overlap with the adjacent westbound left, adjustments to the RTOG and RTOR values are made as follows:

RTOG = RTOG + V/C (WBL)
RTOR = RTOR - V/C (WBL)

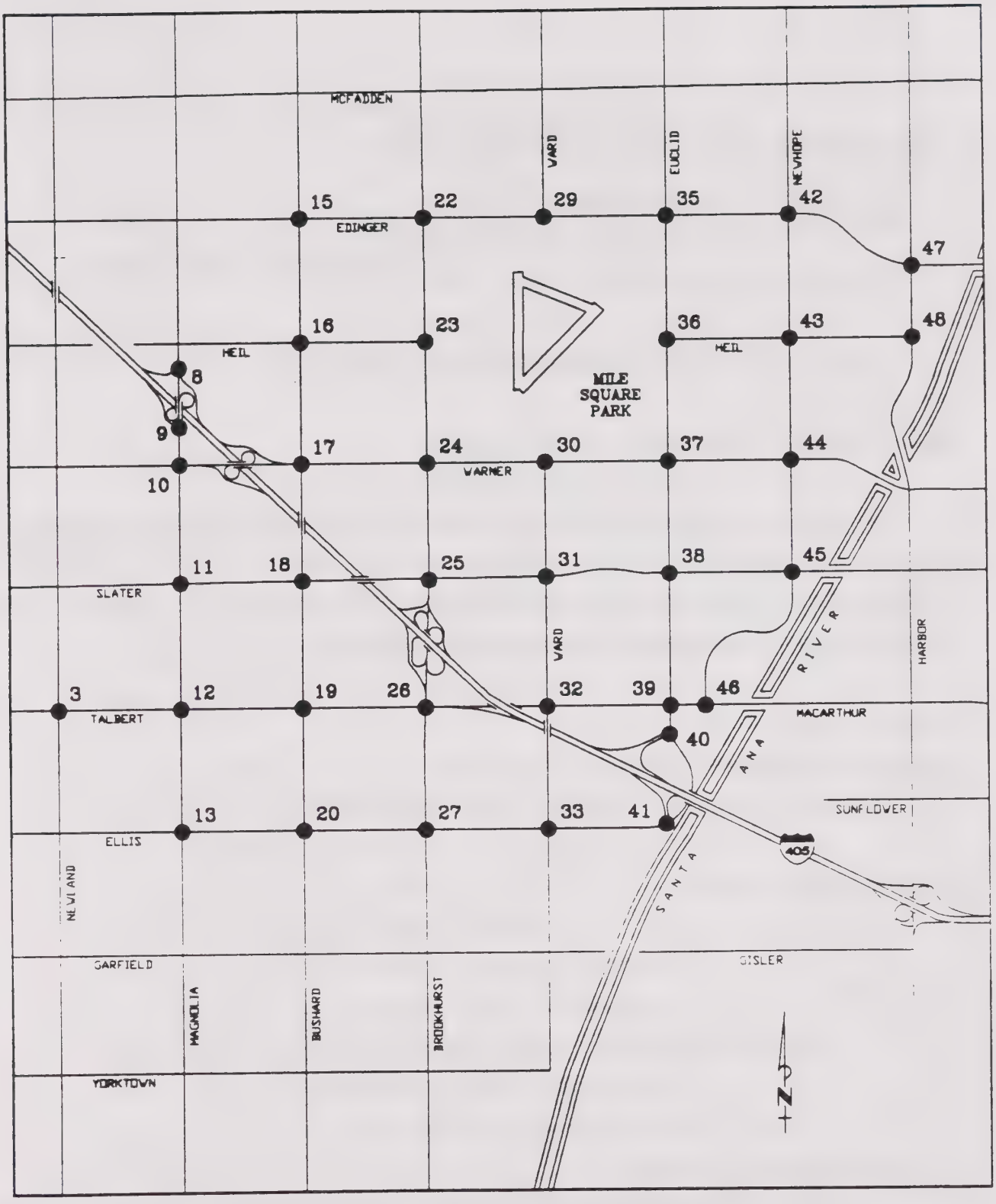


Figure B-1 .

INTERSECTION LOCATION MAP

4. Total Right-Turn Capacity (RTC) Availability For NBR

$$RTC = RTOG + factor \times RTOR$$

Where factor = specified RTOR saturation flow factor

Right-turn adjustment is then as follows: Additional ICU = V/C (NBR) - RTC

A negative value indicates that adequate capacity is available and no adjustment is necessary.

Shared Lane V/C Methodology

For intersection approaches where shared usage of a lane is permitted by more than one turn movement (e.g., left/thru, thru/right, left/thru/right), the individual turn volumes are evaluated to determine whether dedication of the shared lane is warranted to any one given turn movement. The following example demonstrates how this evaluation is carried out:

Example for Shared Left/Thru Lane

1. Average Lane Volume (ALV)

$$ALV = \frac{\text{Left-Turn Volume + Thru Volume}}{\text{Total Left + Thru Approach Lanes (including shared lane)}}$$

2. ALV for Each Approach

$$ALV\ (Left) = \frac{\text{Left-Turn Volume}}{\text{Left Approach Lanes (including shared lane)}}$$

$$ALV\ (Thru) = \frac{\text{Thru Volume}}{\text{Thru Approach Lanes (including shared lane)}}$$

3. Lane Dedication is Warranted

If ALV (Left) is greater than ALV then full dedication of the shared lane to the left-turn approach is warranted. Left-turn and thru V/C ratios for this case are calculated as follows:

$$V/C\ (Left) = \frac{\text{Left-Turn Volume}}{\text{Left Approach Capacity (including shared lane)}}$$

$$V/C\ (Thru) = \frac{\text{Thru Volume}}{\text{Thru Approach Capacity (excluding shared lane)}}$$

Similarly, if ALV (Thru) is greater than ALV then full dedication to the thru approach is warranted, and left-turn and thru V/C ratios are calculated as follows:

$$V/C\ (Left) = \frac{\text{Left-Turn Volume}}{\text{Left Approach Capacity (excluding shared lane)}}$$

$$V/C\ (Thru) = \frac{\text{Thru Volume}}{\text{Thru Approach Capacity (including shared lane)}}$$

4. Lane Dedication is not Warranted

If ALV (Left) and ALV (Thru) are both less than ALV, the left/thru lane is assumed to be truly shared and each left, left/thru or thru approach lane carries an evenly distributed volume of traffic equal to ALV. A combined left/thru V/C ratio is calculated as follows:

$$V/C\ (Left/Thru) = \frac{\text{Left-Turn Volume + Thru Volume}}{\text{Total Left + Thru Approach Capacity (including shared lane)}}$$

This V/C (Left/Thru) ratio is assigned as the V/C (Thru) ratio for the critical movement analysis and ICU summary listing.

If split phasing has not been designated for this approach, the relative proportion of V/C (Thru) that is attributed to the left-turn volume is estimated as follows:

If approach has more than one left-turn (including shared lane), then:

$$V/C\ (Left) = V/C\ (Thru)$$

If approach has only one left-turn lane (shared lane), then:

$$V/C\ (Left) = \frac{\text{Left-Turn Volume}}{\text{Single Approach Lane Capacity}}$$

If this left-turn movement is determined to be a critical movement, the V/C (Left) value is posted in brackets on the ICU summary printout.

These same steps are carried out for shared thru/right lanes. If full dedication of a shared thru/right lane to the right-turn movement is warranted, the right-turn V/C value calculated in step three is checked against the RTOR and RTOG capacity availability if the option to include right-turns in the V/C ratio calculations is selected.

When an approach contains more than one shared lane (e.g., left/thru and thru/right), steps one and two listed above are carried out for the three turn movements combined. Step four is carried out if dedication is not warranted for either of the shared lanes. If dedication of one of the shared lanes is warranted to one movement or another, step three is carried out for the two movements involved, and then steps one through four are repeated for the two movements involved in the other shared lane.

3. Newland & Talbert

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07	100	.06*
NBT	2	3400	710	.24*	610	.20
NBR	0	0	90		60	
SBL	1	1700	90	.05*	80	.05
SBT	2	3400	390	.14	780	.26*
SBR	0	0	90		120	
EBL	1	1700	60	.04	120	.07
EBT	2	3400	600	.18*	670	.20*
EBR	1	1700	60	.04	140	.08
WBL	1	1700	40	.02*	150	.09*
WBT	2	3400	390	.11	680	.20
WBR	1	1700	40	.02	100	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.54**		**.66**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	140	.08	120	.07*
NBT	2	3400	790	.25*	750	.24
NBR	0	0	60		60	
SBL	1	1700	120	.07*	60	.04
SBT	2	3400	370	.14	1020	.33*
SBR	0	0	100		100	
EBL	1	1700	70	.04	250	.15*
EBT	2	3400	930	.27*	880	.26
EBR	1	1700	80	.05	110	.06
WBL	1	1700	50	.03*	110	.06
WBT	2	3400	570	.17	1000	.29*
WBR	1	1700	30	.02	100	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.89**

3. Newland & Talbert

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	140	.08	120	.07*
NBT	2	3400	800	.25*	750	.24
NBR	0	0	60		60	
SBL	1	1700	120	.07*	60	.04
SBT	2	3400	370	.14	1020	.33*
SBR	0	0	100		100	
EBL	1	1700	70	.04	250	.15*
EBT	2	3400	930	.27*	860	.25
EBR	1	1700	80	.05	110	.06
WBL	1	1700	50	.03*	110	.06
WBT	2	3400	570	.17	1010	.30*
WBR	1	1700	30	.02	100	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.90**

8. Magnolia & I-405 NB Ramps

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	620	.18	1280	.38*
NBR	1	1700	580	.34f	220	.13f
SBL	0	0	0		0	
SBT	1.5	5100	1230	.36*	1030	.30
SBR	1.5		280	.16	150	.09
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	1	1700	160	.09	650	.38
Right Turn Adjustment					WBR	.38*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.41**		**.81**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	660	.19	1270	.37
NBR	1	1700	570	.34f	440	.26f
SBL	0	0	0		0	
SBT	1.5	5100	1540	.45*	1270	.37*
SBR	1.5		280	.16	140	.08
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	1	1700	380	.22	710	.42
Right Turn Adjustment			WBR	.03*	WBR	.42*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.84**

8. Magnolia & I-405 NB Ramps

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	660	.19	1260	.37
NBR	1	1700	570	.34f	440	.26f
SBL	0	0	0		0	
SBT	1.5	5100	1550	.46*	1280	.38*
SBR	1.5		280	.16	140	.08
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	1	1700	390	.23	690	.41
Right Turn Adjustment			WBR	.03*	WBR	.40*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.54		.83

9. Magnolia & I-405 SB Ramps

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1180	.35*	1420	.42*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	810	.24	1140	.34
SBR	1	1700	660	.39f	270	.16f
EBL	1	1700	40	.02*	270	.16*
EBT	0	0	0		0	
EBR	1	1700	300	.18	630	.37
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.08*	EBR	.15*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.50**		**.78**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1160	.34*	1720	.51*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	840	.25	1070	.31
SBR	1	1700	960	.56f	580	.34f
EBL	1	1700	50	.03*	270	.16*
EBT	0	0	0		0	
EBR	1	1700	410	.24	730	.43
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.14*	EBR	.12*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.84**

9. Magnolia & I-405 SB Ramps

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1160	.34*	1730	.51*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	850	.25	1070	.31
SBR	1	1700	960	.56f	580	.34f
EBL	1	1700	60	.04*	270	.16*
EBT	0	0	0		0	
EBR	1	1700	410	.24	730	.43
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.13*	EBR	.12*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.84**

10. Magnolia & Warner

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06	120	.07*
NBT	2	3400	940	.28*	1000	.29
NBR	1	1700	260	.15	100	.06
SBL	1	1700	270	.16*	210	.12
SBT	2	3400	740	.22	1300	.38*
SBR	1	1700	120	.07	280	.16
EBL	1	1700	210	.12	280	.16*
EBT	3	5100	1590	.31*	980	.19
EBR	1	1700	70	.04	150	.09
WBL	1	1700	60	.04*	160	.09
WBT	3	5100	740	.15	1430	.28*
WBR	1	1700	50	.03	180	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.94**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	90	.03	160	.05*
NBT	3	5100	950	.19*	970	.19
NBR	1	1700	260	.15	190	.11
SBL	2	3400	370	.11*	220	.06
SBT	3	5100	800	.16	1350	.26*
SBR	1	1700	80	.05	310	.18
EBL	2	3400	150	.04	280	.08*
EBT	3	5100	1720	.34*	1170	.23
EBR	1	1700	80	.05	150	.09
WBL	2	3400	100	.03*	130	.04
WBT	3	5100	860	.17	1500	.29*
WBR	1	1700	80	.05	520	.31
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.73**

10. Magnolia & Warner

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	90	.03	170	.05*
NBT	3	5100	950	.19*	970	.19
NBR	1	1700	260	.15	190	.11
SBL	2	3400	370	.11*	220	.06
SBT	3	5100	800	.16	1350	.26*
SBR	1	1700	80	.05	310	.18
EBL	2	3400	150	.04	280	.08*
EBT	3	5100	1710	.34*	1180	.23
EBR	1	1700	80	.05	150	.09
WBL	2	3400	100	.03*	130	.04
WBT	3	5100	880	.17	1510	.30*
WBR	1	1700	70	.04	520	.31
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.72		.74

11. Magnolia & Slater

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	80	.05*
NBT	2	3400	1170	.34*	830	.24
NBR	1	1700	210	.12	90	.05
SBL	1	1700	180	.11*	120	.07
SBT	2	3400	630	.19	1140	.34*
SBR	1	1700	130	.08	150	.09
EBL	1	1700	130	.08	150	.09*
EBT	2	3400	920	.31*	640	.21
EBR	0	0	120		80	
WBL	1	1700	90	.05*	140	.08
WBT	2	3400	440	.15	810	.27*
WBR	0	0	80		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.86**		**.80**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	20	.01	120	.07*
NBT	2	3400	1180	.35*	910	.27
NBR	1	1700	170	.10	170	.10
SBL	1	1700	180	.11*	140	.08
SBT	2	3400	760	.22	1170	.34*
SBR	1	1700	140	.08	130	.08
EBL	1	1700	100	.06	130	.08*
EBT	2	3400	940	.31*	730	.24
EBR	0	0	110		80	
WBL	1	1700	130	.08*	140	.08
WBT	2	3400	550	.19	920	.31*
WBR	0	0	100		150	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**.85**

11. Magnolia & Slater

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	20	.01	110	.06*
NBT	2	3400	1180	.35*	910	.27
NBR	1	1700	170	.10	170	.10
SBL	1	1700	180	.11*	140	.08
SBT	2	3400	760	.22	1170	.34*
SBR	1	1700	140	.08	130	.08
EBL	1	1700	100	.06	130	.08*
EBT	2	3400	940	.31*	740	.24
EBR	0	0	110		80	
WBL	1	1700	130	.08*	130	.08
WBT	2	3400	530	.19	920	.31*
WBR	0	0	100		150	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**.84**

12. Magnolia & Talbert

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07	110	.06*
NBT	2	3400	1030	.30*	810	.24
NBR	1	1700	110	.06	130	.08
SBL	1	1700	160	.09*	120	.07
SBT	2	3400	660	.19	1140	.34*
SBR	1	1700	70	.04	120	.07
EBL	1	1700	100	.06	180	.11*
EBT	2	3400	820	.24*	550	.16
EBR	1	1700	50	.03	60	.04
WBL	1	1700	70	.04*	200	.12
WBT	2	3400	460	.14	860	.25*
WBR	1	1700	90	.05	90	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.81**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	130	.08	160	.09*
NBT	2	3400	1040	.31*	900	.26
NBR	1	1700	90	.05	160	.09
SBL	1	1700	180	.11*	150	.09
SBT	2	3400	760	.22	1160	.34*
SBR	1	1700	120	.07	100	.06
EBL	1	1700	90	.05	150	.09*
EBT	2	3400	1100	.32*	630	.19
EBR	1	1700	70	.04	60	.04
WBL	1	1700	70	.04*	190	.11
WBT	2	3400	600	.18	1020	.30*
WBR	1	1700	100	.06	120	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.83**		**.87**

12. Magnolia & Talbert

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	130	.08	160	.09*
NBT	2	3400	1040	.31*	900	.26
NBR	1	1700	90	.05	150	.09
SBL	1	1700	170	.10*	150	.09
SBT	2	3400	760	.22	1140	.34*
SBR	1	1700	120	.07	100	.06
EBL	1	1700	90	.05	150	.09*
EBT	2	3400	1090	.32*	630	.19
EBR	1	1700	70	.04	60	.04
WBL	1	1700	70	.04*	190	.11
WBT	2	3400	590	.17	1020	.30*
WBR	1	1700	100	.06	120	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.82		.87

13. Magnolia & Ellis

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04	80	.05*
NBT	2	3400	1000	.29*	770	.23
NBR	1	1700	90	.05	90	.05
SBL	1	1700	90	.05*	120	.07
SBT	2	3400	620	.18	1160	.34*
SBR	1	1700	40	.02	110	.06
EBL	1	1700	80	.05	90	.05*
EBT	2	3400	1000	.31*	550	.18
EBR	0	0	40		70	
WBL	1	1700	40	.02*	160	.09
WBT	2	3400	450	.14	820	.27*
WBR	0	0	40		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.76**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06	120	.07*
NBT	2	3400	1010	.30*	950	.28
NBR	1	1700	80	.05	120	.07
SBL	1	1700	100	.06*	120	.07
SBT	2	3400	720	.21	1190	.35*
SBR	1	1700	40	.02	100	.06
EBL	1	1700	120	.07	60	.04*
EBT	2	3400	1140	.35*	780	.25
EBR	0	0	40		60	
WBL	1	1700	40	.02*	120	.07
WBT	2	3400	620	.20	1170	.38*
WBR	0	0	50		130	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.78**		**.89**

13. Magnolia & Ellis

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06	120	.07*
NBT	2	3400	1010	.30*	950	.28
NBR	1	1700	90	.05	120	.07
SBL	1	1700	100	.06*	120	.07
SBT	2	3400	720	.21	1180	.35*
SBR	1	1700	40	.02	100	.06
EBL	1	1700	120	.07	50	.03*
EBT	2	3400	1140	.35*	780	.25
EBR	0	0	40		60	
WBL	1	1700	40	.02*	120	.07
WBT	2	3400	630	.20	1170	.38*
WBR	0	0	50		130	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.78		.88

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05*	70	.04
NBT	2	3400	530	.17	780	.25*
NBR	0	0	50		70	
SBL	1	1700	50	.03	40	.02*
SBT	2	3400	590	.21*	630	.21
SBR	0	0	120		90	
EBL	1	1700	50	.03	100	.06*
EBT	2	3400	770	.23*	840	.28
EBR	0	0	10		110	
WBL	1	1700	20	.01*	90	.05
WBT	2	3400	610	.18	910	.27*
WBR	1	1700	50	.03	100	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.65**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06*	160	.09*
NBT	2	3400	580	.22	1080	.35
NBR	0	0	160		100	
SBL	1	1700	50	.03	40	.02
SBT	2	3400	950	.31*	860	.28*
SBR	0	0	110		100	
EBL	1	1700	10	.01	130	.08
EBT	2	3400	870	.27*	1240	.39*
EBR	0	0	50		100	
WBL	1	1700	110	.06*	50	.03*
WBT	2	3400	910	.27	1040	.31
WBR	1	1700	40	.02	140	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.84**

15. Bushard & Edinger

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06*	160	.09*
NBT	2	3400	580	.22	1080	.35
NBR	0	0	160		100	
SBL	1	1700	50	.03	40	.02
SBT	2	3400	950	.31*	860	.28*
SBR	0	0	110		100	
EBL	1	1700	10	.01	120	.07
EBT	2	3400	870	.27*	1240	.39*
EBR	0	0	50		100	
WBL	1	1700	110	.06*	50	.03*
WBT	2	3400	920	.27	1050	.31
WBR	1	1700	40	.02	150	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.84**

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05*	100	.06
NBT	2	3400	480	.16	860	.29*
NBR	0	0	60		110	
SBL	1	1700	50	.03	50	.03*
SBT	2	3400	610	.20*	720	.22
SBR	0	0	60		20	
EBL	1	1700	10	.01	50	.03
EBT	2	3400	80	.04*	180	.07*
EBR	0	0	60		70	
WBL	1	1700	50	.03*	90	.05*
WBT	2	3400	130	.05	170	.06
WBR	0	0	40		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.37**		**.49**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09*	270	.16
NBT	2	3400	580	.19	1220	.40*
NBR	0	0	60		130	
SBL	1	1700	110	.06	60	.04*
SBT	2	3400	1070	.34*	870	.26
SBR	0	0	80		30	
EBL	1	1700	50	.03	80	.05*
EBT	2	3400	250	.15*	310	.12
EBR	0	0	260	.15	110	
WBL	1	1700	70	.04*	140	.08
WBT	2	3400	210	.07	480	.16*
WBR	0	0	30		80	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.70**

16. Bushard & Heil

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09*	260	.15
NBT	2	3400	580	.19	1220	.40*
NBR	0	0	60		130	
SBL	1	1700	110	.06	60	.04*
SBT	2	3400	1070	.34*	870	.26
SBR	0	0	80		30	
EBL	1	1700	50	.03	80	.05*
EBT	2	3400	250	.15*	310	.12
EBR	0	0	250		110	
WBL	1	1700	70	.04*	140	.08
WBT	2	3400	210	.07	490	.17*
WBR	0	0	30		80	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.67		.71

17. Bushard & Warner

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	360	.21*	260	.15*
NBT	2	3400	570	.21	870	.28
NBR	0	0	150		70	
SBL	1	1700	290	.17	170	.10
SBT	2	3400	730	.28*	920	.29*
SBR	0	0	210		70	
EBL	1	1700	130	.08	320	.19*
EBT	3	5100	1170	.23*	1030	.20
EBR	1	1700	90	.05	270	.16
WBL	1	1700	80	.05*	160	.09
WBT	4	6800	760	.12	1370	.22*
WBR	0	0	30		140	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**.90**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	390	.23	370	.22*
NBT	2	3400	640	.21*	1110	.35
NBR	0	0	70		90	
SBL	1	1700	680	.40*	170	.10
SBT	2	3400	990	.36	1060	.34*
SBR	0	0	230		100	
EBL	2	3400	160	.05	430	.13*
EBT	3	5100	1640	.32*	1480	.29
EBR	1	1700	140	.08	280	.16
WBL	1	1700	120	.07*	140	.08
WBT	4	6800	1150	.18	1800	.32*
WBR	0	0	90		370	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.05**		**1.06**

17. Bushard & Warner

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	400	.12*	370	.11*
NBT	2	3400	640	.21	1110	.35
NBR	0	0	70		80	
SBL	2	3400	680	.20	170	.05
SBT	2	3400	990	.36*	1060	.34*
SBR	0	0	230		100	
EBL	2	3400	160	.05	430	.13*
EBT	4	6800	1630	.24*	1470	.22
EBR	1	1700	140	.08	280	.16
WBL	1	1700	120	.07*	140	.08
WBT	4	6800	1130	.17	1760	.26*
WBR	1	1700	80	.05	360	.21
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.89**

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05	70	.04
NBT	2	3400	730	.24*	1040	.32*
NBR	0	0	70		40	
SBL	1	1700	240	.14*	150	.09*
SBT	2	3400	360	.13	1130	.34
SBR	0	0	80		30	
EBL	1	1700	190	.11	110	.06*
EBT	2	3400	1240	.38*	740	.24
EBR	0	0	60		60	
WBL	1	1700	60	.04*	120	.07
WBT	2	3400	500	.18	1120	.36*
WBR	0	0	110		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.85**		**.88**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06	110	.06
NBT	2	3400	760	.23*	1150	.35*
NBR	0	0	30		50	
SBL	1	1700	180	.11*	170	.10*
SBT	2	3400	710	.23	1170	.36
SBR	0	0	80		50	
EBL	1	1700	140	.08	60	.04*
EBT	2	3400	1250	.37*	900	.26
EBR	1	1700	70	.04	60	.04
WBL	1	1700	70	.04*	170	.10
WBT	2	3400	630	.19	1220	.36*
WBR	1	1700	140	.08	170	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.80**		**.90**

18. Bushard & Slater

Post-2010 Proposed G.P. Circulation Plan						
			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	90	.05	110	.06
NBT	2	3400	760	.23*	1150	.35*
NBR	0	0	30		50	
SBL	1	1700	180	.11*	170	.10*
SBT	2	3400	710	.23	1170	.36
SBR	0	0	80		50	
EBL	1	1700	140	.08	60	.04*
EBT	2	3400	1250	.37*	910	.27
EBR	1	1700	70	.04	60	.04
WBL	1	1700	80	.05*	170	.10
WBT	2	3400	630	.19	1210	.36*
WBR	1	1700	140	.08	170	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.81		.90

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	100	.06*
NBT	2	3400	630	.23*	930	.30
NBR	0	0	150		90	
SBL	1	1700	100	.06*	110	.06
SBT	2	3400	360	.12	930	.31*
SBR	0	0	50		110	
EBL	1	1700	100	.06	80	.05*
EBT	2	3400	990	.29*	670	.20
EBR	1	1700	50	.03	110	.06
WBL	1	1700	60	.04*	190	.11
WBT	2	3400	370	.11	1030	.30*
WBR	1	1700	100	.06	130	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.77**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	120	.07
NBT	2	3400	570	.21*	1150	.37*
NBR	0	0	150		110	
SBL	1	1700	190	.11*	140	.08*
SBT	2	3400	580	.19	940	.32
SBR	0	0	50		160	
EBL	1	1700	140	.08	90	.05*
EBT	2	3400	1180	.35*	760	.22
EBR	1	1700	70	.04	120	.07
WBL	1	1700	60	.04*	170	.10
WBT	2	3400	500	.15	1140	.34*
WBR	1	1700	150	.09	240	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**.89**

19. Bushard & Talbert

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	120	.07
NBT	2	3400	570	.21*	1150	.37*
NBR	0	0	150		110	
SBL	1	1700	190	.11*	140	.08*
SBT	2	3400	580	.19	940	.32
SBR	0	0	50		160	
EBL	1	1700	140	.08	90	.05*
EBT	2	3400	1170	.34*	750	.22
EBR	1	1700	70	.04	120	.07
WBL	1	1700	60	.04*	170	.10
WBT	2	3400	490	.14	1140	.34*
WBR	1	1700	130	.08	220	.13
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.89**

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	60	.04*
NBT	2	3400	670	.25*	800	.26
NBR	0	0	170		70	
SBL	1	1700	120	.07*	100	.06
SBT	2	3400	360	.12	920	.29*
SBR	0	0	60		80	
EBL	1	1700	90	.05	60	.04*
EBT	2	3400	1100	.34*	740	.23
EBR	0	0	40		40	
WBL	1	1700	50	.03*	160	.09
WBT	2	3400	350	.12	1050	.34*
WBR	0	0	60		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.74**		**.76**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04	150	.09
NBT	2	3400	670	.27*	1090	.34*
NBR	0	0	260		70	
SBL	1	1700	140	.08*	120	.07*
SBT	2	3400	550	.19	930	.30
SBR	0	0	110		80	
EBL	1	1700	50	.03	60	.04*
EBT	2	3400	1240	.37*	970	.30
EBR	0	0	30		50	
WBL	1	1700	60	.04*	210	.12
WBT	2	3400	440	.15	1260	.40*
WBR	0	0	60		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.81**		**.90**

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04	150	.09
NBT	2	3400	680	.28*	1090	.34*
NBR	0	0	260		70	
SBL	1	1700	140	.08*	120	.07*
SBT	2	3400	550	.19	930	.30
SBR	0	0	110		80	
EBL	1	1700	50	.03	60	.04*
EBT	2	3400	1240	.37*	970	.30
EBR	0	0	30		50	
WBL	1	1700	60	.04*	210	.12
WBT	2	3400	450	.15	1260	.40*
WBR	0	0	60		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.82		.90

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	40	.01*	150	.04
NBT	3	5100	810	.16	1540	.30*
NBR	1	1700	100	.06	250	.15
SBL	2	3400	110	.03	150	.04*
SBT	3	5100	1330	.26*	1110	.22
SBR	1	1700	70	.04	140	.08
EBL	1	1700	80	.05	210	.12
EBT	2	3400	750	.22*	630	.19*
EBR	1	1700	100	.06	90	.05
WBL	1	1700	210	.12*	280	.16*
WBT	2	3400	550	.16	750	.22
WBR	1	1700	70	.04	180	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.74**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	40	.01*	250	.07
NBT	3	5100	890	.17	2040	.40*
NBR	1	1700	120	.07	360	.21
SBL	2	3400	100	.03	180	.05*
SBT	3	5100	1840	.36*	1250	.25
SBR	1	1700	60	.04	130	.08
EBL	2	3400	100	.03	310	.09
EBT	2	3400	930	.27*	960	.28*
EBR	1	1700	140	.08	100	.06
WBL	2	3400	370	.11*	410	.12*
WBT	2	3400	990	.29	840	.25
WBR	1	1700	80	.05	170	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.80**		**.90**

22. Brookhurst & Edinger

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	40	.01*	270	.08
NBT	3	5100	880	.17	2010	.39*
NBR	1	1700	120	.07	350	.21
SBL	2	3400	100	.03	190	.06*
SBT	3	5100	1840	.36*	1250	.25
SBR	1	1700	60	.04	140	.08
EBL	2	3400	100	.03	310	.09
EBT	2	3400	930	.27*	960	.28*
EBR	1	1700	140	.08	100	.06
WBL	2	3400	370	.11*	410	.12*
WBT	2	3400	990	.29	840	.25
WBR	1	1700	80	.05	170	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.80		.90

23. Brookhurst & Heil

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02*	150	.09
NBT	3	5100	810	.16	1780	.35*
NBR	1	1700	10	.01	150	.09
SBL	1	1700	20	.01	90	.05*
SBT	3	5100	1350	.26*	1290	.25
SBR	1	1700	60	.04	120	.07
EBL	1	1700	90	.05*	100	.06*
EBT	2	3400	10	.01	70	.04
EBR	0	0	140	.08	110	.06
WBL	1	1700	10	.01	50	.03
WBT	1	1700	10	.01*	40	.04*
WBR	0	0	10		20	
Right Turn Adjustment			EBR	.02*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.41**		**.55**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02*	300	.18
NBT	3	5100	910	.18	2560	.50*
NBR	1	1700	10	.01	160	.09
SBL	1	1700	20	.01	80	.05*
SBT	3	5100	1930	.38*	1590	.31
SBR	1	1700	120	.07	100	.06
EBL	1	1700	100	.06*	80	.05*
EBT	2	3400	10	.01	70	.04
EBR	0	0	400	.24	250	.15
WBL	1	1700	10	.01	60	.04
WBT	1	1700	10	.01*	30	.03*
WBR	0	0	10		20	
Right Turn Adjustment			EBR	.17*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.68**

23. Brookhurst & Heil

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02*	300	.18
NBT	3	5100	900	.18	2540	.50*
NBR	1	1700	10	.01	170	.10
SBL	1	1700	20	.01	80	.05*
SBT	3	5100	1920	.38*	1590	.31
SBR	1	1700	120	.07	100	.06
EBL	1	1700	100	.06*	80	.05*
EBT	2	3400	10	.01	70	.04
EBR	0	0	400	.24	250	.15
WBL	1	1700	10	.01	60	.04
WBT	1	1700	10	.01*	30	.03*
WBR	0	0	10		20	
Right Turn Adjustment			EBR	.17*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.68**

24. Brookhurst & Warner

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05	230	.14
NBT	3	5100	600	.12*	1390	.27*
NBR	1	1700	120	.07	90	.05
SBL	1	1700	350	.21*	250	.15*
SBT	3	5100	1100	.22	1010	.20
SBR	1	1700	100	.06	190	.11
EBL	1	1700	110	.06	200	.12*
EBT	3	5100	1210	.24*	890	.17
EBR	1	1700	90	.05	110	.06
WBL	1	1700	70	.04*	170	.10
WBT	3	5100	640	.13	1280	.25*
WBR	1	1700	130	.08	450	.26
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.84**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	130	.04	460	.14
NBT	3	5100	700	.14*	1900	.37*
NBR	1	1700	190	.11	120	.07
SBL	2	3400	730	.21*	430	.13*
SBT	3	5100	1530	.30	1200	.24
SBR	1	1700	100	.06	250	.15
EBL	2	3400	90	.03	190	.06*
EBT	3	5100	1830	.36*	1370	.27
EBR	1	1700	200	.12	120	.07
WBL	2	3400	90	.03*	230	.07
WBT	3	5100	1080	.21	1820	.36*
WBR	1	1700	150	.09	920	.54
Right Turn Adjustment					WBR	.08*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.79**		**1.05**

24. Brookhurst & Warner

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	120	.04	450	.13
NBT	4	6800	690	.10*	1880	.28*
NBR	1	1700	190	.11	110	.06
SBL	2	3400	730	.21*	430	.13*
SBT	4	6800	1530	.23	1200	.18
SBR	1	1700	100	.06	250	.15
EBL	2	3400	90	.03	200	.06*
EBT	3	5100	1820	.36*	1350	.26
EBR	1	1700	200	.12	120	.07
WBL	2	3400	90	.03*	240	.07
WBT	3	5100	1060	.21	1790	.35*
WBR	2	3400	150	.04	930	.27
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.75		.87

25. Brookhurst & Slater

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	160	.05	350	.10
NBT	3	5100	1050	.21*	1620	.32*
NBR	1	1700	210	.12	260	.15
SBL	1	1700	200	.12*	130	.08*
SBT	3	5100	1190	.23	1290	.25
SBR	1	1700	90	.05	150	.09
EBL	2	3400	100	.03	120	.04*
EBT	2	3400	780	.23*	600	.18
EBR	1	1700	370	.22	170	.10
WBL	2	3400	390	.11*	480	.14
WBT	2	3400	310	.12	760	.30*
WBR	0	0	100		260	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.79**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	220	.06*	420	.12
NBT	3	5100	1440	.28	2090	.41*
NBR	1	1700	270	.16	360	.21
SBL	2	3400	260	.08	160	.05*
SBT	3	5100	1540	.30*	1520	.30
SBR	1	1700	130	.08	190	.11
EBL	2	3400	120	.04	200	.06
EBT	2	3400	750	.22*	810	.24*
EBR	1	1700	310	.18	190	.11
WBL	2	3400	460	.14*	450	.13*
WBT	2	3400	410	.12	780	.23
WBR	1	1700	140	.08	290	.17
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.88**

25. Brookhurst & Slater

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	220	.06*	420	.12
NBT	3	5100	1440	.28	2030	.40*
NBR	1	1700	270	.16	330	.19
SBL	2	3400	260	.08	160	.05*
SBT	3	5100	1530	.30*	1530	.30
SBR	1	1700	130	.08	200	.12
EBL	2	3400	120	.04	210	.06
EBT	2	3400	750	.22*	810	.24*
EBR	1	1700	310	.18	200	.12
WBL	2	3400	440	.13*	510	.15*
WBT	2	3400	410	.12	790	.23
WBR	1	1700	130	.08	290	.17
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.76		.89

26. Brookhurst & Talbert

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06	180	.11*
NBT	3	5100	1340	.26*	1190	.23
NBR	1	1700	480	.28	220	.13
SBL	2	3400	480	.14*	290	.09
SBT	3	5100	990	.19	1760	.35*
SBR	1	1700	210	.12	440	.26
EBL	2	3400	120	.04	240	.07*
EBT	3	5100	1140	.22*	650	.13
EBR	1	1700	50	.03	120	.07
WBL	2	3400	190	.06*	240	.07
WBT	2	3400	620	.18	780	.23*
WBR	1	1700	70	.04	210	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.73**		**.81**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	100	.03	220	.06*
NBT	3	5100	1540	.30*	1450	.28
NBR	1	1700	460	.27	240	.14
SBL	2	3400	810	.24*	420	.12
SBT	3	5100	1190	.23	1870	.37*
SBR	1	1700	220	.13	440	.26
EBL	2	3400	200	.06	280	.08*
EBT	3	5100	1280	.25*	770	.15
EBR	1	1700	90	.05	120	.07
WBL	2	3400	200	.06*	280	.08
WBT	2	3400	790	.23	890	.26*
WBR	1	1700	170	.10	450	.26
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**.82**

26. Brookhurst & Talbert

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	100	.03	230	.07*
NBT	3	5100	1540	.30*	1430	.28
NBR	1	1700	470	.28	240	.14
SBL	2	3400	780	.23*	410	.12
SBT	3	5100	1200	.24	1870	.37*
SBR	1	1700	220	.13	430	.25
EBL	2	3400	200	.06	270	.08*
EBT	3	5100	1270	.25*	760	.15
EBR	1	1700	90	.05	130	.08
WBL	2	3400	170	.05*	290	.09
WBT	2	3400	770	.23	880	.26*
WBR	1	1700	150	.09	340	.20
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.88		.83

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04	150	.09*
NBT	3	5100	1370	.27*	1220	.24
NBR	1	1700	250	.15	100	.06
SBL	1	1700	140	.08*	140	.08
SBT	3	5100	830	.16	1660	.33*
SBR	1	1700	100	.06	330	.19
EBL	1	1700	250	.15	280	.16*
EBT	2	3400	1060	.34*	430	.17
EBR	0	0	90		150	
WBL	1	1700	160	.09*	280	.16
WBT	2	3400	260	.12	820	.27*
WBR	0	0	140		100	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.83**		**.90**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05	170	.10*
NBT	3	5100	1520	.30*	1400	.27
NBR	1	1700	250	.15	120	.07
SBL	1	1700	150	.09*	140	.08
SBT	3	5100	1000	.20	1720	.34*
SBR	1	1700	140	.08	310	.18
EBL	1	1700	240	.14	350	.21*
EBT	2	3400	1250	.41*	510	.21
EBR	0	0	130		200	
WBL	1	1700	140	.08*	320	.19
WBT	2	3400	300	.09	1070	.31*
WBR	1	1700	120	.07	120	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.93**		**1.01**

27. Brookhurst & Ellis

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05	170	.10*
NBT	3	5100	1520	.30*	1400	.27
NBR	1	1700	250	.15	120	.07
SBL	1	1700	150	.09*	130	.08
SBT	3	5100	980	.19	1730	.34*
SBR	1	1700	130	.08	320	.19
EBL	2	3400	240	.07	350	.10*
EBT	2	3400	1250	.41*	500	.21
EBR	0	0	130		200	
WBL	2	3400	150	.04*	300	.09
WBT	2	3400	320	.09	1060	.31*
WBR	1	1700	120	.07	120	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.89		.90

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	20	.01*	30	.02*
NBT	1	1700	20	.01	30	.02
NBR	1	1700	20	.01	30	.02
SBL	0.5		200		90	
SBT	1.5	3400	20	.12*	20	.06*
SBR	0		200		150	.09
EBL	1	1700	20	.01	110	.06*
EBT	2	3400	900	.27*	820	.25
EBR	0	0	20		40	
WBL	1	1700	20	.01*	60	.04
WBT	2	3400	710	.21	980	.29*
WBR	1	1700	40	.02	100	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.48**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02	20	.01
NBT	1	1700	20	.01*	30	.02*
NBR	1	1700	20	.01	30	.02
SBL	1	1700	440	.26*	100	.06*
SBT	2	3400	20	.01	20	.01
SBR	0	0	440	.26	100	.06
EBL	1	1700	20	.01	140	.08*
EBT	2	3400	1130	.34*	1250	.38
EBR	0	0	20		40	
WBL	1	1700	20	.01*	60	.04
WBT	2	3400	1110	.33	1240	.36*
WBR	1	1700	90	.05	210	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.57**

29. Ward & Edinger

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02	20	.01
NBT	1	1700	20	.01*	30	.02*
NBR	1	1700	20	.01	30	.02
SBL	1	1700	440	.26*	100	.06*
SBT	2	3400	20	.01	20	.01
SBR	0	0	440	.26	100	.06
EBL	1	1700	30	.02	140	.08*
EBT	2	3400	1130	.34*	1250	.38
EBR	0	0	20		40	
WBL	1	1700	20	.01*	60	.04
WBT	2	3400	1100	.32	1250	.37*
WBR	1	1700	90	.05	210	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.67		.58

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05	260	.15*
NBT	1	1700	10	.16*	10	.11
NBR	0	0	260		170	
SBL	0.5		10	{.01}*	30	
SBT	1.5	3400	10	.01	10	.02*
SBR	0		10		20	
EBL	1	1700	30	.02	40	.02*
EBT	3	5100	1500	.29*	1130	.22
EBR	1	1700	210	.12	90	.05
WBL	1	1700	200	.12*	170	.10
WBT	3	5100	680	.14	1750	.35*
WBR	0	0	30		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.59**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	100	.03	530	.16
NBT	1	1700	10	.18*	10	.19*
NBR	0	0	290		310	
SBL	0.5		10	{.01}*	30	{.02}*
SBT	1.5	3400	10	.01	10	.02
SBR	0		10		20	
EBL	1	1700	30	.02	40	.02
EBT	3	5100	2360	.46*	1740	.34*
EBR	1	1700	440	.26	120	.07
WBL	1	1700	240	.14*	420	.25*
WBT	3	5100	1140	.23	2550	.50
WBR	0	0	30		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.85**

30. Ward & Warner

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	100	.03	540	.16
NBT	1	1700	10	.18*	10	.18*
NBR	0	0	290		300	
SBL	0.5		10	{.01}*	30	{.02}*
SBT	1.5	3400	10	.01	10	.02
SBR	0		10		20	
EBL	1	1700	30	.02	40	.02
EBT	3	5100	2370	.46*	1720	.34*
EBR	1	1700	430	.25	120	.07
WBL	1	1700	240	.14*	420	.25*
WBT	3	5100	1130	.23	2520	.50
WBR	0	0	30		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.84		.84

31. Ward & Slater

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05*	150	.09
NBT	2	3400	180	.11	500	.17*
NBR	0	0	200	.12	80	
SBL	1	1700	60	.04	40	.02*
SBT	2	3400	290	.10*	270	.09
SBR	0	0	50		30	
EBL	1	1700	50	.03	120	.07*
EBT	2	3400	1140	.41*	700	.23
EBR	0	0	240		90	
WBL	1	1700	120	.07*	220	.13
WBT	2	3400	420	.13	1250	.38*
WBR	0	0	10		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.69**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	130	.08*	210	.12
NBT	2	3400	210	.12	860	.28*
NBR	0	0	230	.14	80	
SBL	1	1700	50	.03	30	.02*
SBT	2	3400	580	.18*	540	.17
SBR	0	0	40		50	
EBL	1	1700	70	.04	140	.08*
EBT	2	3400	1390	.41*	910	.27
EBR	1	1700	300	.18	210	.12
WBL	1	1700	160	.09*	270	.16
WBT	2	3400	590	.18	1400	.43*
WBR	0	0	10		60	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.81**		**.86**

31. Ward & Slater

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07*	230	.14*
NBT	2	3400	210	.12	850	.27
NBR	0	0	240	.14	80	
SBL	1	1700	50	.03	30	.02
SBT	2	3400	570	.18*	540	.17*
SBR	0	0	40		50	
EBL	1	1700	70	.04	140	.08*
EBT	2	3400	1390	.41*	900	.26
EBR	1	1700	300	.18	220	.13
WBL	1	1700	160	.09*	260	.15
WBT	2	3400	570	.17	1470	.45*
WBR	0	0	10		60	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.80		.89

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04	80	.05*
NBT	2	3400	380	.16*	360	.14
NBR	0	0	170		100	
SBL	1	1700	230	.14*	70	.04
SBT	1	1700	340	.20	480	.28*
SBR	1	1700	80	.05	110	.06
EBL	1	1700	70	.04	90	.05*
EBT	2	3400	960	.28*	540	.16
EBR	1	1700	70	.04	90	.05
WBL	1	1700	90	.05*	250	.15
WBT	2	3400	480	.14	1240	.36*
WBR	1	1700	30	.02	180	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.79**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07	150	.09*
NBT	2	3400	500	.15*	650	.19
NBR	1	1700	280	.16	300	.18
SBL	1	1700	370	.22*	160	.09
SBT	2	3400	580	.20	840	.28*
SBR	0	0	90		120	
EBL	1	1700	50	.03	40	.02*
EBT	2	3400	1220	.36*	730	.21
EBR	1	1700	170	.10	130	.08
WBL	1	1700	180	.11*	350	.21
WBT	2	3400	800	.24	1570	.46*
WBR	1	1700	50	.03	340	.20
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**.90**

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07	150	.09*
NBT	2	3400	500	.15*	640	.19
NBR	1	1700	250	.15	260	.15
SBL	1	1700	360	.21*	170	.10
SBT	2	3400	580	.20	840	.28*
SBR	0	0	100		120	
EBL	1	1700	50	.03	40	.02*
EBT	2	3400	1170	.34*	730	.21
EBR	1	1700	180	.11	120	.07
WBL	1	1700	150	.09*	330	.19
WBT	2	3400	720	.21	1430	.42*
WBR	1	1700	40	.02	380	.22
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.86**

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	10	.01*
NBT	2	3400	420	.12*	290	.09
NBR	1	1700	620	.36	240	.14
SBL	1	1700	60	.04*	50	.03
SBT	2	3400	280	.11	420	.18*
SBR	0	0	90		200	
EBL	1	1700	270	.16	80	.05
EBT	2	3400	1320	.40*	570	.17*
EBR	0	0	30		20	
WBL	1	1700	120	.07*	540	.32*
WBT	2	3400	550	.17	1150	.35
WBR	0	0	40		50	
Right Turn Adjustment			NBR	.19*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.87**		**.73**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	10	.01*
NBT	2	3400	670	.20*	540	.16
NBR	1	1700	610	.36	220	.13
SBL	1	1700	80	.05*	140	.08
SBT	2	3400	380	.11	820	.24*
SBR	1	1700	130	.08	330	.19
EBL	1	1700	420	.25	190	.11*
EBT	2	3400	1340	.41*	600	.19
EBR	0	0	50		40	
WBL	1	1700	80	.05*	510	.30
WBT	2	3400	540	.18	1290	.41*
WBR	0	0	70		90	
Right Turn Adjustment			NBR	.12*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.88**		**.82**

33. Ward & Ellis

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	10	.01*
NBT	2	3400	660	.19*	520	.15
NBR	1	1700	630	.37	230	.14
SBL	1	1700	80	.05*	90	.05
SBT	2	3400	370	.11	830	.24*
SBR	1	1700	120	.07	330	.19
EBL	1	1700	410	.24	180	.11*
EBT	2	3400	1350	.41*	590	.19
EBR	0	0	50		40	
WBL	1	1700	90	.05*	520	.31
WBT	2	3400	600	.20	1250	.39*
WBR	0	0	70		80	
Right Turn Adjustment			NBR	.14*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**.80**

35. Euclid & Edinger

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	140	.08*	260	.15
NBT	2	3400	1000	.29	1230	.36*
NBR	1	1700	40	.02	70	.04
SBL	1	1700	80	.05	120	.07*
SBT	2	3400	1350	.40*	830	.24
SBR	1	1700	120	.07	140	.08
EBL	1	1700	110	.06	130	.08*
EBT	2	3400	670	.20*	580	.17
EBR	1	1700	320	.19	160	.09
WBL	1	1700	100	.06*	90	.05
WBT	2	3400	460	.14	730	.21*
WBR	1	1700	80	.05	150	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.79**		**.77**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	220	.06*	300	.09
NBT	2	3400	1160	.34	1310	.39*
NBR	1	1700	60	.04	60	.04
SBL	2	3400	260	.08	240	.07*
SBT	2	3400	1280	.38*	1100	.32
SBR	1	1700	130	.08	100	.06
EBL	1	1700	100	.06	180	.11*
EBT	2	3400	1070	.31*	920	.27
EBR	1	1700	380	.22	210	.12
WBL	1	1700	70	.04*	90	.05
WBT	2	3400	790	.23	1130	.33*
WBR	1	1700	150	.09	240	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.95**

35. Euclid & Edinger

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	210	.06	310	.09
NBT	3	5100	1150	.24*	1320	.27*
NBR	0	0	50		60	
SBL	2	3400	260	.08*	240	.07*
SBT	3	5100	1270	.25	1100	.22
SBR	1	1700	130	.08	100	.06
EBL	1	1700	110	.06	180	.11*
EBT	2	3400	1070	.31*	910	.27
EBR	1	1700	380	.22	200	.12
WBL	1	1700	70	.04*	80	.05
WBT	2	3400	790	.23	1130	.33*
WBR	1	1700	150	.09	240	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.72		.83

36. Euclid & Heil

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1170	.34	1610	.47*
NBR	1	1700	60	.04	100	.06
SBL	1	1700	170	.10	50	.03*
SBT	2	3400	1620	.48*	1010	.30
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	100		130	
WBT	1	1700	0	.12*	0	.15*
WBR	0	0	110		120	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.70**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1390	.41*	1660	.49*
NBR	1	1700	100	.06	170	.10
SBL	1	1700	160	.09*	180	.11*
SBT	2	3400	1600	.47	1160	.34
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1	1700	180	.11*	230	.14*
WBT	0	0	0		0	
WBR	1	1700	120	.07	200	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.79**

36. Euclid & Heil

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1360	.27*	1670	.33*
NBR	1	1700	70	.04	150	.09
SBL	1	1700	160	.09*	180	.11*
SBT	3	5100	1600	.31	1160	.23
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1	1700	180	.11*	230	.14*
WBT	0	0	0		0	
WBR	1	1700	130	.08	200	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.52		.63

37. Euclid & Warner

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03*	160	.09
NBT	2	3400	700	.21	1180	.35*
NBR	1	1700	150	.09	120	.07
SBL	1	1700	250	.15	110	.06*
SBT	2	3400	1300	.38*	600	.18
SBR	1	1700	270	.16	300	.18
EBL	2	3400	340	.10	360	.11*
EBT	3	5100	1370	.27*	770	.15
EBR	1	1700	110	.06	100	.06
WBL	2	3400	110	.03*	200	.06
WBT	3	5100	540	.11	1440	.28*
WBR	1	1700	110	.06	230	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**.85**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	110	.03*	310	.09
NBT	2	3400	820	.24	1240	.36*
NBR	1	1700	120	.07	190	.11
SBL	2	3400	280	.08	170	.05*
SBT	2	3400	1330	.39*	670	.20
SBR	1	1700	260	.15	410	.24
EBL	2	3400	440	.13	380	.11*
EBT	3	5100	2030	.40*	1420	.28
EBR	1	1700	220	.13	180	.11
WBL	2	3400	170	.05*	160	.05
WBT	3	5100	1000	.20	2200	.43*
WBR	1	1700	160	.09	290	.17
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.92**		**1.00**

37. Euclid & Warner

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	100	.03*	320	.09
NBT	3	5100	740	.15	1240	.24*
NBR	1	1700	100	.06	180	.11
SBL	2	3400	270	.08	170	.05*
SBT	3	5100	1340	.26*	670	.13
SBR	1	1700	270	.16	410	.24
EBL	2	3400	440	.13	380	.11*
EBT	3	5100	2020	.40*	1400	.27
EBR	1	1700	220	.13	170	.10
WBL	2	3400	170	.05*	170	.05
WBT	3	5100	1000	.20	2160	.42*
WBR	1	1700	160	.09	290	.17
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.79		.87

38. Euclid & Slater

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02*	210	.12
NBT	2	3400	700	.21	1150	.34*
NBR	1	1700	320	.19	150	.09
SBL	1	1700	230	.14	50	.03*
SBT	2	3400	1330	.39*	770	.23
SBR	1	1700	100	.06	160	.09
EBL	1	1700	120	.07	120	.07*
EBT	2	3400	1000	.36*	440	.15
EBR	0	0	210		80	
WBL	1	1700	120	.07*	200	.12
WBT	2	3400	260	.09	1020	.36*
WBR	0	0	60		220	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**.85**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03*	380	.22*
NBT	2	3400	880	.26	1340	.39
NBR	1	1700	410	.24	100	.06
SBL	1	1700	370	.22	80	.05
SBT	2	3400	1530	.45*	900	.26*
SBR	1	1700	100	.06	110	.06
EBL	1	1700	70	.04	120	.07*
EBT	2	3400	1150	.34*	560	.16
EBR	1	1700	370	.22	150	.09
WBL	1	1700	150	.09*	320	.19
WBT	2	3400	420	.12	1090	.32*
WBR	1	1700	160	.09	340	.20
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.96**		**.92**

38. Euclid & Slater

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	380	.22*
NBT	3	5100	810	.16*	1330	.26
NBR	1	1700	190	.11	50	.03
SBL	1	1700	390	.23*	80	.05
SBT	3	5100	1530	.30	890	.17*
SBR	1	1700	100	.06	100	.06
EBL	1	1700	60	.04	120	.07*
EBT	2	3400	1180	.35*	540	.16
EBR	1	1700	350	.21	150	.09
WBL	1	1700	150	.09*	150	.09
WBT	2	3400	390	.11	1160	.34*
WBR	1	1700	140	.08	350	.21
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.88		.85

39. Euclid & Talbert

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	170	.10*	180	.11*
NBT	2	3400	890	.26	1120	.33
NBR	1	1700	610	.36	300	.18
SBL	2	3400	440	.13	110	.03
SBT	2	3400	1100	.32*	1000	.29*
SBR	1	1700	120	.07	100	.06
EBL	2	3400	110	.03	150	.04*
EBT	2	3400	990	.29*	370	.11
EBR	1	1700	100	.06	160	.09
WBL	2	3400	130	.04*	580	.17
WBT	3	5100	280	.05	1340	.26*
WBR	1	1700	70	.04	340	.20
Right Turn Adjustment			NBR	.04*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.75**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	240	.14	270	.16*
NBT	3	5100	1440	.28*	1210	.24
NBR	2	3400	1050	.31	700	.21
SBL	2	3400	440	.13*	220	.06
SBT	3	5100	1180	.23	1570	.31*
SBR	1	1700	130	.08	210	.12
EBL	2	3400	190	.06	260	.08
EBT	2	3400	1470	.43*	800	.24*
EBR	1	1700	110	.06	160	.09
WBL	2	3400	500	.15*	720	.21*
WBT	3	5100	680	.13	1650	.32
WBR	1	1700	150	.09	140	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.04**		**.97**

39. Euclid & Talbert

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	220	.13	320	.19*
NBT	3	5100	940	.18*	880	.17
NBR	1	1700	290	.17	360	.21
SBL	2	3400	590	.17*	270	.08
SBT	3	5100	1140	.22	1140	.22*
SBR	1	1700	140	.08	260	.15
EBL	2	3400	260	.08	180	.05
EBT	2	3400	1300	.38*	830	.24*
EBR	1	1700	110	.06	150	.09
WBL	2	3400	240	.07*	380	.11*
WBT	3	5100	520	.10	1420	.28
WBR	1	1700	280	.16	380	.22
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.85**		**.81**

40. Euclid & I-405 NB Ramps

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05*	330	.19*
NBT	2	3400	980	.29	1000	.29
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1200	.35*	1450	.43*
SBR	1	1700	160	.09f	500	.29f
EBL	1	1700	770	.45*	600	.35*
EBT	0	0	0		0	
EBR	1	1700	500	.29	1020	.60
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment					EBR	.11*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**1.13**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	70	.02	320	.09*
NBT	2	3400	1440	.42*	1440	.42
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	3	5100	1270	.25	1720	.34*
SBR	1	1700	520	.31f	940	.55f
EBL	1.5		1350	.40*	770	{.36}*
EBT	0	5100	0		0	.36
EBR	1.5		420	.25	1050	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.87**		**.84**

40. Euclid & I-405 NB Ramps

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04*	330	.19*
NBT	2	3400	740	.22	1040	.31
NBR	1	1700	810	.48	460	.27
SBL	1	1700	10	.01	10	.01
SBT	3	5100	1150	.23*	1370	.27*
SBR	1	1700	280	.16	520	.31
EBL	2	3400	780	.23*	490	.14
EBT	1.5	5100	590	.20	430	.25*
EBR	1.5		420		1020	.30
WBL	2	3400	210	.06	380	.11*
WBT	2	3400	310	.09*	560	.17
WBR	0	0	10		10	
Right Turn Adjustment			NBR	.13*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.87**

41. I-405 SB Ramps & Euclid/Ellis

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	30	.02
NBT	1	1700	10	.01*	30	.04*
NBR	0	0	10		40	
SBL	1	1700	270	.16*	180	.11*
SBT	1	1700	10	.04	10	.05
SBR	0	0	50		70	
EBL	1	1700	680	.40*	600	.35*
EBT	2	3400	1130	.33	470	.14
EBR	1	1700	10	.01	10	.01
WBL	1	1700	20	.01	10	.01
WBT	2	3400	520	.15*	1550	.46*
WBR	1	1700	890	.52f	590	.35f
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**1.01**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	30	.02
NBT	1	1700	10	.01*	40	.05*
NBR	0	0	10		50	
SBL	2	3400	620	.18*	520	.15*
SBT	1	1700	10	.05	10	.06
SBR	0	0	80		90	
EBL	2	3400	630	.19	660	.19*
EBT	2	3400	1270	.38*	520	.16
EBR	0	0	10		10	
WBL	1	1700	10	.01*	10	.01
WBT	2	3400	550	.16	1610	.47*
WBR	1	1700	890	.52	840	.49
Right Turn Adjustment			WBR	.18*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.81**		**.91**

41. I-405 SB Ramps & Euclid/Ellis

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	30	.02
NBT	1	1700	10	.01*	40	.05*
NBR	0	0	10		50	
SBL	2	3400	670	.20*	550	.16*
SBT	1	1700	10	.05	10	.06
SBR	0	0	80		90	
EBL	2	3400	620	.18	600	.18*
EBT	2	3400	1320	.39*	560	.17
EBR	0	0	10		10	
WBL	1	1700	10	.01*	10	.01
WBT	2	3400	620	.18	1570	.46*
WBR	1	1700	910	.54	880	.52
Right Turn Adjustment			WBR	.17*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.83		.90

42. Newhope & Edinger

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04*	130	.08
NBT	2	3400	550	.17	1100	.37*
NBR	0	0	40		150	
SBL	1	1700	110	.06	80	.05*
SBT	2	3400	900	.29*	640	.21
SBR	0	0	80		60	
EBL	1	1700	40	.02	80	.05*
EBT	2	3400	600	.18*	630	.19
EBR	1	1700	90	.05	90	.05
WBL	1	1700	60	.04*	60	.04
WBT	2	3400	520	.15	840	.25*
WBR	1	1700	20	.01	70	.04
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.77**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04*	170	.10
NBT	2	3400	610	.18	1130	.33*
NBR	1	1700	70	.04	170	.10
SBL	1	1700	120	.07	160	.09*
SBT	2	3400	1000	.32*	810	.27
SBR	0	0	90		110	
EBL	1	1700	60	.04	90	.05*
EBT	2	3400	1100	.32*	1090	.32
EBR	1	1700	140	.08	110	.06
WBL	1	1700	60	.04*	70	.04
WBT	2	3400	890	.26	1240	.36*
WBR	1	1700	30	.02	130	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.88**

42. Newhope & Edinger

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04*	180	.11
NBT	2	3400	630	.19	1140	.34*
NBR	1	1700	80	.05	170	.10
SBL	1	1700	120	.07	160	.09*
SBT	2	3400	1000	.32*	800	.27
SBR	0	0	80		110	
EBL	1	1700	60	.04	90	.05*
EBT	2	3400	1100	.32*	1100	.32
EBR	1	1700	140	.08	110	.06
WBL	1	1700	60	.04*	70	.04
WBT	2	3400	890	.26	1240	.36*
WBR	1	1700	30	.02	120	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.89**

43. Newhope & Heil

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	20	.01
NBT	2	3400	410	.14	1170	.37*
NBR	0	0	50		90	
SBL	1	1700	110	.06	30	.02*
SBT	2	3400	870	.26*	620	.19
SBR	0	0	30		40	
EBL	1	1700	40	.02	40	.02*
EBT	2	3400	100	.04*	140	.05
EBR	0	0	40		30	
WBL	1	1700	120	.07*	80	.05
WBT	2	3400	110	.06	190	.09*
WBR	0	0	110		130	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.55**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	50	.03
NBT	2	3400	460	.16	1190	.39*
NBR	0	0	70		140	
SBL	1	1700	130	.08	30	.02*
SBT	2	3400	920	.30*	760	.24
SBR	0	0	90		60	
EBL	1	1700	40	.02	60	.04*
EBT	2	3400	130	.05*	350	.12
EBR	0	0	40		60	
WBL	1	1700	270	.16*	90	.05
WBT	2	3400	140	.08	330	.15*
WBR	0	0	120		170	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.65**

43. Newhope & Heil

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	50	.03
NBT	2	3400	480	.17	1220	.41*
NBR	0	0	90		160	
SBL	1	1700	120	.07	40	.02*
SBT	2	3400	920	.30*	760	.24
SBR	0	0	90		60	
EBL	1	1700	30	.02	60	.04*
EBT	2	3400	110	.04*	330	.11
EBR	0	0	40		60	
WBL	1	1700	270	.16*	80	.05
WBT	2	3400	150	.08	340	.15*
WBR	0	0	120		170	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.67**

44. Newhope & Warner

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05*	230	.14
NBT	2	3400	240	.09	1000	.33*
NBR	0	0	70		130	
SBL	1	1700	290	.17	90	.05*
SBT	2	3400	780	.26*	480	.18
SBR	0	0	110		120	
EBL	1	1700	100	.06	210	.12*
EBT	3	5100	1320	.26*	630	.12
EBR	1	1700	190	.11	190	.11
WBL	1	1700	110	.06*	90	.05
WBT	3	5100	550	.11	1280	.25*
WBR	1	1700	100	.06	170	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.80**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05*	410	.24*
NBT	2	3400	300	.09	1070	.31
NBR	1	1700	100	.06	230	.14
SBL	1	1700	340	.20	150	.09
SBT	2	3400	890	.30*	580	.21*
SBR	0	0	140		120	
EBL	2	3400	90	.03	310	.09*
EBT	3	5100	1400	.27*	1220	.24
EBR	1	1700	410	.24	330	.19
WBL	2	3400	270	.08*	110	.03
WBT	3	5100	1080	.21	1540	.30*
WBR	1	1700	150	.09	140	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.89**

44. Newhope & Warner

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05*	380	.22*
NBT	2	3400	370	.11	1130	.33
NBR	1	1700	100	.06	230	.14
SBL	1	1700	340	.20	150	.09
SBT	2	3400	890	.30*	570	.21*
SBR	0	0	140		130	
EBL	2	3400	80	.02	290	.09*
EBT	3	5100	1390	.27*	1220	.24
EBR	1	1700	410	.24	320	.19
WBL	2	3400	270	.08*	110	.03
WBT	3	5100	1080	.21	1540	.30*
WBR	1	1700	150	.09	150	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.75		.87

45. Newhope & Slater

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	50	.03
NBT	2	3400	180	.07*	370	.12*
NBR	0	0	50		40	
SBL	1	1700	610	.36*	240	.14*
SBT	2	3400	370	.16	370	.18
SBR	0	0	160		250	
EBL	1	1700	320	.19*	230	.14*
EBT	2	3400	960	.28	380	.11
EBR	1	1700	70	.04	50	.03
WBL	1	1700	70	.04	80	.05
WBT	2	3400	480	.20*	820	.40*
WBR	0	0	210		530	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.87**		**.85**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02*	100	.06
NBT	2	3400	220	.07	620	.21*
NBR	0	0	30		100	
SBL	2	3400	670	.20	400	.12*
SBT	2	3400	600	.29*	460	.23
SBR	0	0	380		320	
EBL	1	1700	420	.25*	330	.19*
EBT	2	3400	960	.28	610	.18
EBR	1	1700	110	.06	70	.04
WBL	1	1700	140	.08	90	.05
WBT	2	3400	840	.25*	790	.23*
WBR	1	1700	270	.16	610	.36
Right Turn Adjustment					WBR	.04*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.86**		**.84**

45. Newhope & Slater

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02	100	.06
NBT	2	3400	390	.13*	720	.24*
NBR	0	0	40		110	
SBL	2	3400	690	.20*	400	.12*
SBT	2	3400	610	.29	510	.23
SBR	0	0	370		260	
EBL	1	1700	320	.19*	300	.18*
EBT	2	3400	930	.27	600	.18
EBR	1	1700	100	.06	80	.05
WBL	1	1700	190	.11	140	.08
WBT	2	3400	800	.24*	780	.23*
WBR	1	1700	280	.16	580	.34
Right Turn Adjustment					WBR	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.81		.84

46. Newhope & Talbert

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10		60	
NBT	1	1700	10	.02*	20	.06*
NBR	0	0	10		30	
SBL	1.5		150	{.05}*	220	{.07}*
SBT	0.5	3400	20	.05	10	.07
SBR	2	3400	150	.04	220	.06
EBL	1	1700	80	.05	80	.05*
EBT	2	3400	1940	.59*	790	.24
EBR	0	0	80		10	
WBL	1	1700	30	.02*	10	.01
WBT	3	5100	450	.09	2020	.40*
WBR	1	1700	20	.01	60	.04
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.73**		**.63**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	50	
NBT	1	1700	20	.02	30	.08*
NBR	0	0	10		60	
SBL	2	3400	220	.06	780	.23*
SBT	0.5	3400	20	.08*	10	.06
SBR	1.5		240		210	
EBL	2	3400	850	.25*	80	.02*
EBT	3	5100	2120	.43	1780	.35
EBR	0	0	70		10	
WBL	1	1700	60	.04	10	.01
WBT	3	5100	1330	.26*	2290	.45*
WBR	1	1700	300	.18	230	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.83**

46. Newhope & Talbert

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	10	.01
NBT	2	3400	980	.29*	450	.13*
NBR	1	1700	380	.22	510	.30
SBL	2	3400	100	.03*	610	.18*
SBT	2	3400	250	.07	470	.14
SBR	1	1700	90	.05	140	.08
EBL	1	1700	280	.16	80	.05*
EBT	3	5100	1870	.37*	1490	.29
EBR	0	0	10		10	
WBL	2	3400	350	.10*	460	.14
WBT	3	5100	1150	.23	2040	.40*
WBR	1	1700	140	.08	40	.02
Right Turn Adjustment					NBR	.05*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.86**

47. Harbor & Edinger

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	80	.02*	220	.06
NBT	3	5100	770	.15	1470	.29*
NBR	1	1700	90	.05	90	.05
SBL	2	3400	150	.04	260	.08*
SBT	3	5100	1430	.28*	1060	.21
SBR	1	1700	30	.02	50	.03
EBL	2	3400	80	.02	120	.04*
EBT	3	5100	550	.11*	510	.10
EBR	1	1700	110	.06	70	.04
WBL	2	3400	160	.05*	110	.03
WBT	3	5100	440	.09	670	.13*
WBR	1	1700	80	.05	190	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.59**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	150	.04*	420	.12
NBT	3	5100	1270	.25	1670	.33*
NBR	1	1700	110	.06	130	.08
SBL	2	3400	120	.04	300	.09*
SBT	3	5100	1560	.31*	1400	.27
SBR	1	1700	40	.02	60	.04
EBL	2	3400	100	.03	150	.04
EBT	3	5100	750	.15*	920	.18*
EBR	1	1700	340	.20	270	.16
WBL	2	3400	260	.08*	170	.05*
WBT	3	5100	700	.14	860	.17
WBR	1	1700	130	.08	200	.12
Right Turn Adjustment			EBR	.02*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.70**

47. Harbor & Edinger

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	150	.04*	420	.12
NBT	3	5100	1270	.25	1670	.33*
NBR	1	1700	110	.06	130	.08
SBL	2	3400	120	.04	300	.09*
SBT	3	5100	1560	.31*	1400	.27
SBR	1	1700	40	.02	60	.04
EBL	2	3400	100	.03	150	.04
EBT	3	5100	750	.15*	920	.18*
EBR	1	1700	340	.20	270	.16
WBL	2	3400	260	.08*	170	.05*
WBT	3	5100	700	.14	860	.17
WBR	1	1700	130	.08	200	.12
Right Turn Adjustment			EBR	.02*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.70**

48. Harbor & Heil

Existing (1990)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04*	230	.14
NBT	3	5100	750	.15	1760	.35*
NBR	0	0	10		10	
SBL	1	1700	40	.02	20	.01*
SBT	3	5100	1700	.33*	1060	.21
SBR	1	1700	170	.10	130	.08
EBL	0.5		220		100	.06*
EBT	1.5	3400	80	.16*	20	.04
EBR	0		230		50	
WBL	0	0	20	{.01}*	40	
WBT	1	1700	20	.04	60	.09*
WBR	0	0	30		50	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.56**

Post-2010 Current G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	130	.08*	430	.25*
NBT	3	5100	1370	.27	2130	.42
NBR	0	0	20		10	
SBL	1	1700	50	.03	20	.01
SBT	3	5100	2020	.40*	1680	.33*
SBR	1	1700	330	.19	150	.09
EBL	1	1700	230	.14*	190	.11*
EBT	1	1700	90	.05	30	.02
EBR	1	1700	370	.22	210	.12
WBL	0	0	20		60	
WBT	1	1700	30	.05*	70	.11*
WBR	0	0	30		60	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.85**

48. Harbor & Heil

Post-2010 Proposed G.P. Circulation Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	130	.08*	430	.25*
NBT	3	5100	1370	.27	2130	.42
NBR	0	0	20		10	
SBL	1	1700	50	.03	20	.01
SBT	3	5100	2020	.40*	1680	.33*
SBR	1	1700	330	.19	150	.09
EBL	1	1700	230	.14*	190	.11*
EBT	1	1700	90	.05	30	.02
EBR	1	1700	370	.22	210	.12
WBL	0	0	20		60	
WBT	1	1700	30	.05*	70	.11*
WBR	0	0	30		60	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.72		.85

ACCOPRESS®

25970	YELLOW
25971	BLACK
25972	LIGHT BLUE
25973	DARK BLUE
25974	LIGHT GRAY
25975	LIGHT GREEN
25976	DARK GREEN
25977	TANGERINE
25978	RED
25979	EXECUTIVE RED

GENUINE PRESSBOARD

ACCO INTERNATIONAL INC.
CHICAGO, ILLINOIS 60612